Medical Times

The Journal of the American Medical Profession

VOL. 68 MEDICAL TIMES • MARCH, 1940 NO. 3

Incorporating the

LONG ISLAND MEDICAL JOURNAL
WESTERN MEDICAL TIMES

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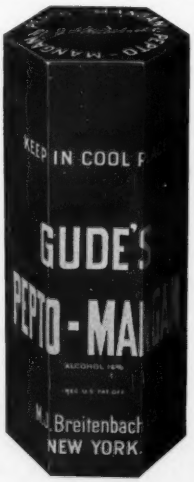

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VENEREAL DISEASE INFORMATION

(1) Illegal and unethical practices still exist widespread and in great volume.

(2) In 35 cities, 62 per cent of the 1,151 drugstores visited were willing to diagnose and sell "remedies" for syphilis or gonorrhea; 31 per cent would not diagnose but did sell remedies, especially if asked for by name; only 7 per cent refused to diagnose or sell.

(3) There are on the market many different patent "remedies" for venereal diseases, apparently sold in large volume.

(4) There is some indication that the sale of such "remedies" is now even larger in volume than 6 to 8 years ago.

(5) Large numbers of charlatans, herbalists, and other unlicensed practitioners are treating many persons having syphilis and gonorrhea.

(6) A huge educational task yet remains to be done, judging from a series of replies by men in the street to casual questions concerning proper treatment for syphilis and gonorrhea.

—American Social Hygiene Association.

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Joshua Marsden Van Cott

AS a teacher, Dr. Van Cott superbly satisfied the exacting criteria laid down by Cheever of Harvard in his recent address before the Chicago Surgical Society. "A teacher," said Dr. Cheever, "should have receptivity and critical sense which makes him alive to scientific progress and keen in evaluating its permanent and true value; he should have the enthusiasm and personal magnetism which inspire interest, and he should have the power of lucid interpretation and presentation; he is the radio through which the soundless waves of scientific thought are made audible to his students. If he is an original investigator, so much the better."

However, Dr. Van Cott was much more than a teacher. He was a man of wide-ranging interests, and upon the sound bases of physiology and pathology he founded his very notable activities as a clinician in hospital and private practice; upon the foundation of a strong social-mindedness he developed his work in the State and County Societies, in the American College of Physicians, and in an advisory capacity for the Department of Health; while out of his keen cultural leanings grew the erudition, insight and taste that gave his personality so great a charm.

But perhaps his greatest trait was his humanness in the personal relation of physician to patient, something never understood by the doctrinaire advocates of depersonalized practice, but which still stands as the strongest barrier between MEDICINE and its would-be ravishers. Such a figure as Van Cott, typifying MEDICINE at its best, confutes all the dialectics of the alien forces in our midst.

Hepatoxins in Modern Therapy

IN the December, 1939, issue of the *Journal of the American Medical Association* appears an excellent article titled Public Interest In Venereal Disease. This article presents very significant as well as interesting data, e.g., "The number of doses of the arsenical drugs used for the treatment of syphilis amounted in the last fiscal year to 10,656,253, an increase of 84 per cent over the number of doses of such drugs used in 1933. More than five and a half million blood tests for syphilis were made in the United States during the last fiscal year, whereas in 1930 only 1,632,083 blood tests were reported."

In the closing portion of this article, nine important recommendations are made by the United States Public Health Service; they are:

1) A trained public health staff which knows how to deal with syphilis.
2) Regulations requiring reporting and follow-up on all cases of syphilis.
3) Facilities for treatment of all patients — both those who can and who cannot pay.
4) Free laboratory service available to all physicians and clinics.
5) Distribution of free antisyphilitic drugs to all physicians and clinics.
6) Blood tests for all pregnant women, and treatment where required.
7) Blood tests of all persons before marriage.
8) Blood tests in all complete physical examinations.
9) An educational program.

A cursory examination of these data, along with the rules recommended by the United States Public Health Service, reveals that they are highly commendable but there is nevertheless a very definite warning which should be incorporated in this advice. At present, knowledge of liver function is adequate enough for us to know that one cannot indiscriminately use arsenic in all cases without occasionally producing liver damage which might subsequently cause serious consequences. In spite of the limited value of the various methods for testing liver function, liver damage due to arsenic can often be detected before clinical signs are apparent and the plan of therapy altered accordingly. —E.J.G.

Health and Culture

WE are at a turning point of our social history. In analyzing our civilization certain of our traditional criteria no longer serve reliably. Changes that seem to be catastrophic may represent only a shift of energy from old to new fields, or even a change for the better in the health of the people.

Such analyzing of our declining (?) or disintegrating (?) civilization turns largely around the topics of literature, art, music, and the economic and political systems.

Selecting literature for consideration, we find Philip Rahv (*American Mercury*, February, 1940) insisting that American writing has slumped into an acute depression, with the decline showing no signs of abating, and the real situation disguised by the promotion of mediocre authors into a false eminence and the habituation of the people, through commercial artifices, to inferior products. He names names, and gives reasons for his literary judgments.

The "cultural front", it appears, has been wholly destroyed by recent political events. Only a "remnant sale" of our literary tradition is being conducted. The social and economic crisis of our time has politicalized the intellectuals. They have deserted the literary field and are now engaged in political movements. The habits of mind dictated by political considerations preclude creative activities.

We believe that there is another aspect to this matter—a medical reason why the candles are snuffed; why the fires smolder; why genius is dead; why the descending curtain signalizes the end of the show.

The decline in tuberculosis coincides with the decline in creative writing. We quote here some remarks of Dr. Lewis J. Moorman before the 1935 Annual Congress on Medical Education, Hospitals and Licensure in order to show how the toxins of tuberculosis, in times past, have influenced the creative mind:

> As one studies the course of this malady [tuberculosis], one is confronted with a strange paradox. One finds interwoven with the curse of death "a thread of life, exceeding bright and fair." The tubercle bacillus resident in the human organism gives rise to two distinct manifestations: the depletion of physical energy and the stimulation of mental activity . . . In those who are endowed with exceptional mental quali-

ties and are at the same time suffering from tuberculosis, often there seems to be a strange psychic stimulus bent on creative accomplishment.

In the discussion following, Dr. Kennon Dunham spoke as follows:

Dr. Moorman advanced the thought that tuberculosis increased the mentality of the individuals by stimulating the mind so that for a short time the tuberculous patient is capable of more productive work. This had not been my experience, but I had not been treating Stevensons and Laennecs. Then I saw a different picture. The possible answer might be that these men worked; they did not go to bed. They were not controlled. Those who turned out most brilliant results were men who kept on working and died early from the disease. My patients were in bed; of course, they were much more average, but they did rest, and every effort was made to reduce their toxicity. So I realized that, if there were such a thing as mental stimulation from tuberculin toxin, my patients had not received it.

Not only is tuberculosis waning as a scourge, but our therapeutic methods reduce toxicity to a minimum.

The chances are that today a Stevenson, as child, boy and adolescent, is better fed and housed; his teeth and nutrition are taken intelligently into account; his general hygiene is looked after. If, in spite of all this, he becomes infected by tuberculosis, the disease is recognized early, he is put to bed, and appropriate medical and surgical measures calculated to put the affected lung at rest are instituted. Such a Stevenson will probably write no great literature.

In the healthful days to come we may not apprehend the past role of tuberculosis in quickening creative faculties; and by way of compensation for good health we may lack certain cultural joys.

The Concept of Reversed Vascular Peristalsis

SINCE the analogy of vascular peristalsis to intestinal peristalsis has been noted by a number of observers, one must conceive of an occasional reversal in the former as in the latter, even though one is at present unable to postulate the possible factors.

Schlesinger, speaking of the development of anastomoses in the coronary system of the heart when a pathological reason for their development is at work, remarks (*Am. Heart J.* 15:528-568, May, 1938) that "From an anatomical viewpoint this may appear to be a satisfactory circulation. It seems, however, that there must often be a greatly disturbed physiologic balance. Thus when, as in Fig. 13, the blood flow through the whole of the right coronary artery moved from its narrower peripheral end to its wider, more central end, there must have been some functional derangement of the flow. The arteries do not serve as mere inert tubes for the passage of blood, but their complicated muscular and elastic tissue walls are also concerned in the local control of that flow. *When the flow through a vessel is in the opposite direction to that for which the artery was designed, there must be some disturbance of function* [italics ours]. Such disturbances must occur on occasion in different locations in hearts in which certain parts are being nourished by an anastomotic circulation. *Perhaps this flow in the wrong direction, so to speak, has some relation to anginal pains* [italics ours]."

Certain functional ischemias, temporary and evanescent, may possibly provide the mechanisms of otherwise inexplicable clinical phenomena now disguised under such nomina as epilepsy, Ménière's disease, migraine, etc., but really owing their cryptic manifestations to reversed vascular peristalsis.

A New Specialty is Born

NOW it is electro-encephalography which follows upon electrocardiography. The electro-encephalogram is becoming as familiar as the electrocardiogram. So one encounters in the literature and upon society programs such titles as "The Electro-encephalograms of Children."

Encephalography is not enough. Supplementing it is this new method whereby an apparatus consisting of a cathode ray oscillograph with saline leads on the scalp records the alternating currents of the brain, in other words brain waves. The study of these currents set up in the cerebral cortex by brain action, and their registration, enable us better to localize

—Concluded on page 150

A NEW IMMUNITY CRITERION BY REGISTRATION OF *Leukocytic Reactions*

GUNTER WALLBACH, M.D.
Leyden, Holland

AS to the analysis of immunity processes in the organism, we can recognize that it is very difficult to understand the significance of the different antibodies. We know very well that the presence of these substances is not sufficient for the diagnosis of a given immunity. The fact is very evident in the case of typhoid fever. In the course of that disease, the presence and the formation of antibodies, for instance, of agglutinins, does not mean anything regarding the prognosis. Antibodies appear only as diagnostic and not as prognostic evidence for the doctor. And the modern immunity doctrine no longer acknowledges the immunity value of certain antibodies. Now, one makes use of the death-life method in order to determine the immunity value of a given process.

However, the observations of life or death give us very vague information about immunity. Many biologic processes remain unobservable under these experimental conditions. On the other hand, a great many immunity processes may bring death to the organism, too, as they signify active mechanisms which may be very dangerous under certain circumstances.

THEREFORE it is in order to find other phenomena indicating immunity processes. In fact, it is very interesting to analyze the leukocytic reactions of the blood as to their relations with immunity. We know very well that these leukocytic reactions of the blood stream signify a special reaction in infectious diseases, as Türk has described very close relations between these leukocytic reactions and the different phases of infectious diseases. Thus Türk has mentioned the polynuclear leukocytosis, the lymphocytosis, and the mononuclear leukocytosis during single phases of infectious diseases. Such observations, however, are contradictory with respect to the results of experimental biologic reports. For these observations have proved that the increase of blood leukocytes and also the polynucleosis signify decreased immunity within the organism. However, one has not recognized such relations for all diseases. For typhoid fever as well as acute septicemia is very often accompanied by lymphocytosis in spite of a very bad prognosis.

THE reason for all these contradictory theories is explained by the fact that no one has yet analyzed all phases of leukocytic reactions in the course of infections. Generally, one classifies the leukocytic reactions of the blood stream as polynucleosis, monocytosis, and lymphocytosis. But under these conditions, it is very difficult to understand agranulocytosis. Therefore many authors have believed that the lymphocytotic leucopenia occurring in agranulocytosis belongs to exceptional leukocytic reactions appearing only in the course of some infectious processes, for instance, dur-

From the Laboratory for Medicobiologic Analyses, Leyden, Holland.

ing typhoid fever, miliary tuberculosis, and septicemia. These diseases cause degenerative processes of the bone marrow. In the same way, the agranulocytic reaction is supposed to be brought about by constitutional degeneration of the bone marrow. All these theories must appear very vague. However, if we analyze systematically the leukocytic reactions in the course of experimental infections we may understand very clearly these so-called exceptional agranulocytic reactions.

IN the course of our experimental analyses we have observed the single phases of leukocytic reactions in the rabbit. After intravenous injection of a *Bacillus coli* suspension as well as after the use of emulsions of other pathogenic bacteria, a marked leukopenia is evident immediately after such an injection. Our experimental analyses have proved that the period and the intensity of leukopenia are proportional to the virulence of the injected bacteria. For instance, 0.3 c.c. of a very thick bacterial emulsion establishes a very strong leukopenia in the course of which the leukocytes fall under 1,000 per cu. mm. At the same time, lymphocytes increase relatively to more than 90 per cent, sometimes to 100 per cent. Under these conditions, one may speak of a real agranulocytosis. And that intensive leukopenia is to be seen from 6 until 24 hours after bacterial infection. However, if we use smaller quantities of bacteria or bacteria of lower virulence the leukopenic phase will still be observed, although not so intensively and during a shorter period. For instance, the lymphocytosis may show only 80 per cent, the time of that phase being shortened to 10 minutes. Non-pathogenic bacteria may bring about only a very brief and low leukopenia which disappears a minute after bacterial injection.

THE anatomical analyses of these experimental animals have shown that leukopenic lymphocytosis represents a passive blood destruction. Especially the lungs, the liver, and the spleen are full of leukocytes in course of destruction which have emigrated in the neighborhood of the blood vessels. After the passive phase of blood destruction, an active blood regeneration begins according to biologic rules. We see substantially the same reaction that is also visible during inflammation. According to Weigert, the first inflammatory alteration is marked by necrosis, which brings about the other active reactions around the necrotic area. However, these leukopenic reactions in man have been accurately described very seldom. Perhaps the leukocytes have been examined by the different authors very late, when the leukopenia has already disappeared. It is very possible that these leukopenic phases are evident during the incubation period of diseases when only symptoms of very vague character are evident. But typhoid fever and miliary tuberculosis show the leukopenic lymphocytosis very distinctly. These theories may be supported by some examinations in man. Stieve, Reichmann *et al.* have observed the leukocytic reactions of the human blood stream in the course of active immunization. All vaccinated bacteria have brought about at first a phase of leukopenia followed by polynuclear leukocytosis. In that way we may establish the fact that man shows leukopenia phases, too, after bacterial inoculation.

BY all these examinations and observations, we must conclude that the virulence of bacteria is responsible for the intensity of leukocytic reactions. For bacteria of lower virulence manifest lower leukopenias, too. Bacterial virulence depends not only on the character of the bacteria themselves but also on the sensitivity of the organism which has been infected. In an immune organism, bacteria do not develop such a strong action. Therefore it is worth while to analyze the immunity reactions from that point of view.

The examinations of Wallbach have shown us that the active immunization of a rabbit modifies completely the character of the leukopenic reactions following bacterial injections. That fact is very evident after injection of *Bacillus coli.* If only one injection of colon bacilli has taken

place a very strong leukopenia of the injected rabbit has been brought about, for 6 hours approximately. During that phase, the relative lymphocytosis increases up to 90 per cent. After another injection of the same organisms following an interval of 8 days, the same leukopenia is to be seen for only 3 hours, the leukopenia being inferior to 90 per cent. Finally, the leukopenic reaction is far less intensive when a third injection of colon bacilli has been given to the same animal under the same experimental conditions. Now, the leukopenia is strong for only one hour, the lymphocytosis showing only a percentage of 70.

UNDER these conditions, one comes to the conclusion that an immunity analysis is possible by observation of the leukopenia. All the other leukocytic reactions following the leukopenic phase reveal the existence of the active immunity reaction. However, if the leukopenia is very strong and long lasting the other leukocytic reactions may disappear completely, so that the leukopenia comes immediately to the normal leukocyte level; or the rabbit succumbs to the infection during the leukopenic phase. The briefer and the lower the leukopenia which has been brought about, the more pronounced and the stronger are the leukocytoses. But the relations between leukocytosis and immunity are not so clear as between leukopenia and absence of immunity. For practical purposes, the leukopenia, and not the leukocytosis, provides a criterion of immunity; for a very high immunity makes the leukocytosis disappear, too.

Not only active but also passive immunity can be determined and tested by leukocytic reactions. For instance, when an immune serum against colon bacilli has been applied 2 days before the colon injection one can suppress the leukopenia of the blood stream very definitely. By that method, one may recognize, too, if a real immunity effect has been attained.

All these observations, realized after injection of colon bacilli, are visible after other bacteria, too; viz., after typhoid bacilli, paratyphoid bacilli, and streptococci. Under these conditions, every leukocytic reaction is specific for a certain bacillus. For instance, if a rabbit has been immunized against colon bacilli the leukopenia diminishes only after reinjection of colon bacilli, not after the injection of other bacilli. For when the same rabbit has been injected by streptococci the ordinary leukopenic reaction is brought about, just as in other untreated rabbits.

THE specificity of these leukopenic reactions may also be utilized for determinations of bacillary groups. We know very well that the bacteria of the coli-typhoid group manifest a certain mutual relationship. That fact has been revealed by the co-agglutination and by the Castellani reactions. Substantially the same reactions have been observed with our leukopenia test. Rabbits immunized against colon bacilli also manifest a shortening of the leukopenia phase after reinjection of paratyphoid A and paratyphoid B bacilli. However, the reinjection of suipestifer bacteria effects a very long and strong leukopenia phase as if the rabbit had never been immunized. Under these conditions, one cannot suppose biological relations between colon bacilli and suipestifer bacteria. Furthermore, rabbits immunized against paratyphoid A bacteria manifest an immunity leukocytosis only after Gaertner bacilli, but not after colon bacilli nor paratyphoid B bacilli.

FINALLY, we must note some leukocytic reactions concerning unspecific immunity. That kind of immunity may be analyzed, too, by our leukocytic test. Certain yeast extracts are able to bring about such an unspecific immunity of the rabbit against colon bacilli. By the length and the intensity of the leukopenia, such unspecific immunity can be determined very well. Generally, the yeast extracts effect the same shortening of leukopenia that appears after active immunization against colon bacilli. Another advantage of our leukocytic immunity test is indicated by the fact that the unspecific immunity may be measured quantitatively, which has

never been possible by other immunity tests. For instance, our method may be applied for standardization of the immunity effect of yeast extracts.

Substantially the same observations have been made for calcium compounds. The examinations of Wallbach have shown that some calcium compounds, for instance calcium levulinate, bring about a real immunization of rabbits against colon bacilli. However, other calcium compounds, e. g., calcium lactate, are of no effect for unspecific immunizations. In the course of his analyses, Wallbach has concluded that the quantity of the injected calcium is not so important for the immunization effect as the character of the calcium compound. By determination of the limiting dose, a quanitative standardization of the immunizatory effect of the different chemical substances is possible.

FROM all these considerations concerning the leukocytic reactions following bacterial injections, we must conclude that our method gives a very good immunity test. And the leukopenic phase is not only important for the analysis of immunologic problems but also for consideration of problems of general pharmacodynamics. Perhaps some new problems may be rendered analyzable by further elaboration of this method.

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WASSTRAAT 10.

Infected Ectopic PREGNANCY

HYMAN SNEIERSON, M.D., F.A.C.S.

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INFECTION of an ectopic gestation is quite rare. This is evidenced by the fact that Peham[5] reports only one case of infection with peritonitis in 156 cases. This patient had had a criminal abortion. He notes that 7 patients showed inflammatory changes in the adnexa of the nongravid side, but makes no notes of cultures or signs of actual infection. Binet[1] states that suppuration is a rare complication of extra-uterine pregnancy. He reports a study of the subject by Jayle covering a period of 44 years in which only 2 cases were found. Binet[1] also reported a case of his own in which infection followed an attempt at criminal abortion. Schneider[6] states that suppuration occurs in rare cases and results from an infection originating in the intestines or from ascending infection. He reports a case of ectopic pregnancy in a patient with paratyphoid fever in which the hematocele was infected by

the paratyphoid bacillus. In his opinion, the infection occurred as a result of the passage of the bacillus through the intestinal wall. The writer wonders whether in the presence of the positive blood culture the infection could not have occurred by way of the blood stream, i.e., the bacilli in the blood may have been sufficient in number in the pelvic clot to cause the infection. Schneider[7] also reports another case which was directly traceable to an attempted criminal abortion. Culture showed the presence of staphylococci and streptococci.

THE symptoms of infected ectopic pregnancy are those of ectopic pregnancy plus sepsis. Elevation of temperature, leukocytosis and signs of pelvic sepsis are present. Since the above symptoms are occasionally found in ordinary extra-uterine pregnancy, their occurrence only indicates the possibility of an infection. They may be due entirely to decomposition of the hematocele without the actual presence of infection. If the patient has had some previous instrumentation, such as attempted criminal abortion, the possibility of infection of the hematocele should be suspected. However, judging from cases in the literature and cases analyzed at the Binghamton City Hospital, it is surprising how rarely this occurs.

The treatment of infected extra-uterine pregnancy is immediate operation when the patient's condition warrants it. Since in these cases the progression of the hemorrhage is secondary, the use of blood transfusions and other agents to raise the resistance of the patient is indicated as primary to operation. Schneider[7] waited 5 days before the condition suddenly became worse, necessitating surgical interference. Our experience is similar.

The abdominal operation is preferable except in rare instances. Vaginal incision might be indicated when definite pus is aspirated. However, the possibility of bleeding and the difficulty in outlining the pathology present make the abdominal approach the best.

THE writer surveyed the cases of ectopic pregnancy at the Binghamton City Hospital from November 1, 1935 to November 1, 1939. The following chart gives a résumé of the results.

ECTOPIC PREGNANCY

BINGHAMTON CITY HOSPITAL

November 1935 to November 1939

	Number of Cases	Operations	Deaths	Non-Operated	Deaths	Elevation Temperature	With Appendectomy	Deaths
	62	60	1	2	2	23	8	0
%		97%	1.7%	3%	100%	37.1%	13.3%	0

THERE was one death in the cases operated, giving a mortality of 1.7 per cent. This death was due to acute hemorrhagic nephritis occurring nine days postoperatively and cannot be considered an operative death. There was no elevation of temperature postoperatively and no signs of sepsis. The exact cause of the nephritis was not evident on the chart.

Elevation of temperature from 99 to 102.1 occurred in 23 cases, or 37.1 per cent. An attempt was made to find out whether patients who had hemorrhage for longer periods than others showed more elevation of temperature. It was noted that while elevation of temperature when present did occur more frequently in those whose symptoms lasted over six weeks, there were many in the series with no temperature who had had symptoms the same length of time; also that some of the patients with elevation of temperature had symptoms lasting only a few days. We can, therefore, only infer that elevation of temperature is not an indication of the duration of hemorrhage.

We could not tell the number of times

criminal abortions had been attempted on patients from the histories given. It is possible that some cases of elevation of temperature may have been due to this fact.

Eight patients had an appendectomy performed along with the removal of the ectopic mass. There was no mortality in this series. Apparently this additional procedure did not add to the danger of the operation. However, it is noted that cases in which an appendectomy was done were not of the acute fulminating type.

Two cases were treated by the delayed method. Both cases were of the fulminating type and were admitted with practically no blood pressure and in acute shock. Transfusions were given with some improvement in the general condition but death occurred before operative interference was done. One died seven hours after admission and one 24 hours. Autopsy was done on the one dying after seven hours and demonstrated hemorrhage as the cause of death. This emphasizes the point that ectopic pregnancy, especially the fulminating type, should be treated by transfusion and immediate operation.

The few articles on infected ectopic pregnancy and infected hematocele which were available to the writer consisted entirely of case reports. These were usually of infected abdominal pregnancies or of infections in extra-uterine pregnancies which had been missed and were of several months' duration. In these cases there was usually a history of instrumentation, such as attempted criminal abortion. No case was found in which the infection began early without instrumentation. Textbooks merely mention pelvic hematocele and that it occasionally becomes infected. The following case, therefore, seems worth while reporting.

Case Report.
Binghamton City Hospital,
Case #—D4960
V.W. 31 yrs.

This patient had had her last normal period beginning July 28, 1939. On August 28, 1939, she was taken with severe pain in her abdomen and began to flow. This was the usual time for her period, but she had never had pain at this time prior to this attack. The length of her period was normal, five days. She, however, suffered from severe abdominal pain and fainted whenever she got up to walk. After three days she went to a physician who hospitalized her on August 30, 1939. During her stay in the hospital she showed no increase in temperature until the last two days, which were the 17th and 18th days after admission. A diagnosis of a pelvic inflammatory condition was made. Urethral and cervical smears were negative for gonorrhea. She was out of bed the last four days and was apparently well. She was discharged September 17, 1939.

Two days after her return home the patient was taken with intense pain in the lower quadrant. Her temperature by mouth was 102.2, pulse 100. Examination showed the presence of a bulging in the cul-de-sac. The writer was called in consultation and performed a cul-de-sac puncture which demonstrated the presence of old blood. She was given neoprontosil 5 per cent, 10 cc. every 4 hours, and operation was withheld in the hope that the inflammatory process would subside. The next morning her temperature was 99.2, with a pulse of 100. That evening her temperature suddenly went to 103.4 with pulse of 132 and her condition was evidently worse. Operation was therefore done at once.

At operation the omentum was found adherent to the anterior abdominal wall. This extended down to the bladder and the top of the uterus, walling off the pelvic viscera. There was no blood in the abdominal cavity. On severing the adhesions and exposing the tissues posterior to the uterus a large necrotic blood clot containing the ruptured left tube was found. This filled the entire pelvis. The left tube and ovary and the blood clot were removed. Examination of the right tube showed this to be about the size of a thumb with the wall markedly thickened and edematous. The fimbriated end was open, resembling a vase. Pressure on this mass caused the appearance of a thick yellowish pus at the tubal opening. Culture of the pus showed the presence of colon bacilli. The tube was removed. Drains were inserted in the pelvis and led out abdominally. The patient received 500 cc. of blood immediately after the operation. Convalescence was uneventful.

Summary

A CASE of early infected extra-uterine pregnancy is reported in which no instrumentation was done. The condition was due to invasion of the hematocele by colon bacilli from the intestinal tract. This case emphasizes the fact noted by other writers that the treatment is immediate surgery when diagnosed.

A brief résumé of extra-uterine pregnancy at the Binghamton City Hospital is given. This corroborates present day opinion that immediate operative interference is the best treatment for extra-uterine pregnancy.

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67 MAIN STREET.

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THE RECTAL ADMINISTRATION OF *Sulfanilamide*

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THE most convenient mode of administration of sulfanilamide in indicated proctocolonic diseases is by mouth. Situations have arisen, however, in which such administration has been impossible, as in cases of vomiting, when we have had to employ an extra-oral route. The rectal route of administration has been mentioned in the literature, but we could find no references to investigations concerning the absorption of sulfanilamide from the normal rectum and colon, and for that reason we conducted our own studies.[1,2,3] Our investigations showed that sulfanilamide, given either in one per cent solution[2] or in suppositories,[3] is absorbed from the normal rectum as well as from the normal and pathologic colon in man. When solutions were employed, greater concentrations of sulfanilamide in the blood were noted, indicating better absorption. These findings have led us to recommend the rectal route of administration of sulfanilamide whenever the oral route cannot be utilized.

From the Division of Proctology, Department of Surgery, Ernest K. Tanner, Director, The Brooklyn Hospital.

Read before the New York Proctologic Society, November 9, 1939.

Sulfanilamide and Bacillary Dysentery

ANOTHER reason for this study was the observation made by one of us[4] that in vitro, a one per cent solution of sulfanilamide is bacteriostatic to the

Flexner and Duval-Sonne strains of the dysentery bacillus. Since bacillary dysentery is considered to be essentially a localized intestinal disease, it was thought that sulfanilamide administered rectally might also have a local therapeutic effect on this condition. Absorption of sulfanilamide from the colon was investigated as a preliminary step to our studies on experimental bacillary dysentery in animals. The efficacy of sulfanilamide in mice infected with the Duval-Sonne strain of dysentery bacillus was reported.[5] Clinically, sulfanilamide given orally was successfully employed in the treatment of one case of bacillary dysentery by Jennings and Southwell-Sander.[6] Because of paucity of clinical material, we have not had an opportunity to evaluate the effectiveness of sulfanilamide administered rectally in the treatment of bacillary dysentery. We hope that others who see a good number of these cases will give this form of therapy an extensive trial to establish its proper place in the treatment of this disease.

Diarrhea and the Rectal Administration of Sulfanilamide

PATIENTS with diarrhea who cannot take sulfanilamide by mouth apparently offer an insurmountable problem; the problem is not as difficult as it may seem. The feasibility of administering sulfanilamide in solution or in suppository form in the presence of diarrhea was established by the observation that this drug was absorbed from the rectum and colon of rabbits[1] in spite of expulsions of portions of the chemical. It was also noted that a patient[2] who, contrary to our instructions, had expelled the rectal instillations of one per cent sulfanilamide solution about thirty minutes after each administration, showed a concentration of 2.5 mg. free and 2 mg. conjugated sulfanilamide per 100 cc. of blood after the administration of 8 gm. of sulfanilamide. After a total of 14 gm. of sulfanilamide had been given, the concentration was 4.5 mg. free sulfanilamide per 100 cc. of blood; none of the conjugated form was detected. The point is, that in patients with diarrhea, absorption can be expected if the medication is retained for one-half hour or longer.

Sulfanilamide and Gonorrhea

IT has been suggested that sulfanilamide given per rectum in the treatment of genital gonorrhea may also prevent anorectal complications by virtue of its possible local action. We are in disagreement with this view. First, it has not been proved that sulfanilamide has a direct or local effect on gonorrhea. Lewis Mann[7] showed that sulfanilamide is ineffective when used as a urethral irrigation in the treatment of gonorrheal urethritis. Second, there is no good reason for the rectal administration of sulfanilamide in these cases, as the systemic effect of sulfanilamide can be attained more conveniently and safely when this drug is given orally.

Sulfanilamide and Venereal Lymphogranuloma

WE have employed the rectal administration of sulfanilamide in the treatment of the anorectal and glandular manifestations of venereal lymphogranuloma.[8] This work was undertaken as a part of our absorption studies, and is now being extended. In the cases of the anorectal phase of this disease, sulfanilamide exerted the most pronounced effect on the inflammatory and suppurative processes. The perirectal infiltration and exudate disappeared. The raw surfaces healed. The resistance to the examining finger diminished, and the strictures were easily dilatable. In addition to this favorable effect on the strictures, pronounced beneficial changes in the patients' general health were noted.

Toxic Manifestations

TO date, following the rectal administration of sulfanilamide, we have observed fever in one patient, and cyanosis in another.[2] Cyanosis and nausea occurred during the administration of sulfanilamide in suppositories to a patient who had had idiopathic chronic ulcerative colitis for four years.[3] This is the only instance of nausea observed in our studies on the absorption of sulfanilamide administered rectally.

Effect of Sulfanilamide on Bowel Mucosa

SIGMOIDOSCOPIC examinations of our patients revealed no harmful effect upon the mucous membrane of the rectum and colon as a result of the rectal administration of sulfanilamide.

Summary

1. Sulfanilamide administered by rectum in solution or suppository is absorbed. Blood concentration tests indicated that better absorption occurs when solutions are employed.

2. The rectal route of administration is recommended whenever sulfanilamide cannot be given by mouth.

3. Studies on the effectiveness of sulfanilamide administered rectally in bacillary dysentery are being continued.

4. No harmful effects were observed in the mucous membrane of the normal rectum and colon following the introduction of sulfanilamide into the rectum.

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THE STATUS OF *Anterior Poliomyelitis*

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ANTERIOR poliomyelitis is usually regarded as a relatively modern disease. Actually records of its presence have been found almost to the early days of civilization. A skeleton found in Cairo and presumably dating back to 1500 B. C. is said to have shown signs of this disease. Hippocrates, who apparently missed very little, described cases showing its sequelae. The literature of the seventeenth century has accounts of it under the descriptive name of The Parade of the Cripples. In the latter part of the eighteenth century it is found again in England under the name of "Debilities of the Lower Limbs Usually Affecting Children." It occurred at this time in England and India in epidemic forms. It was not until the last century

From the Rochester State Hospital.

that it was recognized as a definite clinical entity and thereafter called Heine-Medin disease after two clinicians who gave a classic description of it. Its infectious nature was first demonstrated by Flexner and Lewis in 1909 when they succeeded for the first time in transferring it successfully to monkeys.

It is now universally accepted as due to a filtrable virus. Rosenow, however, claims that the globoid bodies of the virus are only a stage of mutation of a green streptococcus, with varying virulence. In an interesting series of experiments, he reported[1] recently the development of encephalitis in monkeys after the intranasal injection of virulent poliomyelitis virus, while other monkeys with similar injections received with the same technique developed typical poliomyelitis. Subsequent injections into 14 groups of mice, guinea pigs, rabbits and monkeys were done with the same strain. Strangely enough this mutation produced a definite organism. On autopsy in the brains of these animals streptococci were found in almost all cases while control animals showed none. Rosenow claims that this mutation may explain why atypical cases of poliomyelitis and encephalitis may occur later in epidemics of poliomyelitis, since partial immunity may have been established by passage through various hosts. In addition he believes that this may also account for the difference in virulence and immunological properties present in different epidemics of this disease.

THERE does not appear to be any regularity in the outbreak of epidemics. The mode of transmission is not known although for a long time it was popularly felt that there was an insect carrier from its tendency to occur during the summer months and then disappear with the onset of cold weather. It is felt that the probable source is a human carrier with the virus in the nasopharyngeal secretions. The virus responsible is resistant to drying and freezing but will pass through the finest filters and gelatin under pressure. It, however, is killed by a temperature above 50° C. and is destroyed by sunlight but not x-ray. It has been found in milk and butter.

Although it is primarily a disease of the very young its age incidence seems to be rising, so that many adults are affected although most cases occur between the fifth and tenth years. More males than females are usually affected in the proportion of 3:2. There are two well known forms of the disease, one of which is usually overlooked, namely, the abortive type. The latter is believed to comprise 50-90 per cent of all cases and usually is only determined by laboratory tests during epidemics. The commonest type identified is the lower motor neuron form with its spectacular sequelae. Another preparalytic type is also frequently present where all the initial symptoms develop without affecting the limbs or other muscle groups.

THE paralytic symptoms are too well known to require much elaboration. Since it is felt that much can be done for the patient before these develop it is therefore of paramount importance to become familiar with the preparalytic symptoms. Fever is probably always present and is usually moderate. This initial stage is due to the invasion of the organisms into the nervous tissue. There may at first be present symptoms of a coryza and sore throat, with or without gastro-intestinal symptoms, usually diarrhea which is soon replaced by constipation. In a series of almost three hundred cases vague pains, tenderness and hyperesthesia associated with a stiff neck with the neck or spine very painful on flexion were noted as the commonest findings. Then followed in order headache, drowsiness, stupor, vomiting, restlessness or irritability associated with constipation, loss of appetite, or vomiting. Quite often there was a dull apathetic state with fibrillary twitching of muscles and occasionally ataxia. Less frequently there were delirious or clouded states or marked apprehension, retention of urine, and complaints of weakness without paralysis. Sweating, cough, clonus,

choreiform movements, and diarrhea were not very common. The symptoms during this stage are essentially those of meningeal irritation.

At or soon after the onset of paralysis many of these signs are still present. Fever still continues at a moderate level. The neck or spine continues painful in half the cases when flexion is attempted and drowsiness, pains or tenderness are present in one-third of the cases. Vomiting, restlessness associated with irritability, constipation and red throat are present in one-sixth of the cases.

Occasionally paralysis may occur suddenly but usually it follows the prodromal symptoms in two or three days and occasionally as late as one week. It is only during epidemics that the attention is usually focussed on the initial symptoms as possible poliomyelitis and proper steps taken to avert or modify its course. The spinal fluid findings are valuable as a confirmatory diagnostic aid and puncture may also help relieve pressure. The latter is usually increased to a variable degree. The cell count is variable, from a slight increase to 25 or more, frequently somewhere between this figure and 500. At times it rises to a thousand or more. The majority of the cells are mononuclear in type but during any stage polymorphonuclear neutrophiles may predominate. Sugar and protein are usually found in increased amounts. However, at times the spinal findings may be within normal limits. The white cell count is increased moderately to about 10,000, the leukocytosis occurring in spite of the usually large number of lymphocytes found in the spinal fluid and tissues of the spinal cord.

THE type of paralysis that develops is too well known to require elaboration. It is a lower motor neuron type as a result of swelling and inflammation about the anterior horn cells of the spinal cord and later on ascribable to actual destruction of the anterior or motor cells of the cord. Since nerve cells once destroyed can never regenerate it is obvious that the recovery that will eventually take place will be the result of the resumption of activity by the cells which are still alive. It is therefore quite obvious that the earlier treatment can be used the more chance there is of decreasing unfavorable sequelae. The signs of involvement of the anterior horn cells are therefore seen in the form of a flaccid paralysis with absent deep reflexes, wasting or atrophy of muscles and loss of tone. For a short time prior to this there may be signs of irritation, demonstrated by fibrillation of muscle groups and increased reflexes. A point of significance in treatment is the fact that muscles which are called upon to do most work or are under the greatest strain are the most often involved. Thus the legs are most often paralyzed and then in order one leg, four extremities, one arm, one arm and leg, shoulder girdle, pelvic girdle, and finally the pharyngeal and diaphragmatic muscles. Actual localization in the central nervous system is not common though polio-encephalitis does occur. This selectivity is all the more remarkable in view of the fact that the course of the virus is believed to be from the nasal mucosa to the olfactory bulb, to the hypothalamus, to the thalamus, olfactory cortex and medulla and also through the thalamus to the posterior spinal horn and thence to the anterior horn and dorsal root ganglia. In other words the major pathological changes do not occur until the virus has reached the end of its journey. There the essential lesion is an acute inflammation of the interstitial tissue involving mostly the gray matter and to a lesser extent the white matter and meninges. The spinal form is the commonest, but medullary, pontine, cerebral and cerebellar forms occur. There occur marked engorgement and edema with invasion of lymphocytes. At times this is so marked that the cells of the anterior horn (motor) seem to be almost entirely replaced by the inflammatory cells. The damage that takes place is largely due to the edema, pressure and subsequent anoxemia. Death of the cells is correspondingly followed by the death of the axon and dendrons associated with it. Other cells are only partially damaged and can still maintain some degree of function but not enough to ade-

quately nourish the nerve fibers associated with them, resulting in various degrees of toxic effects. Following recovery of the cell function these fibers may again assume their old function after regeneration which may require the growth of a new axis cylinder from the anterior horn of the spinal cord to the muscle innervated by it.

TREATMENT is still more or less general and symptomatic. Apparently preventive treatment by nasal sprays or vaccination has not proven too successful. There are three vaccines which show some measure of success in producing active immunity, such as the Brodie's vaccine, a formalin-killed virus, Fabin's vaccine of virus attenuated by convalescent serum, and Kolmer's vaccine of virus attenuated by sodium ricinoleate. The chief difficulty in evaluating them is that there is no test for immunity for poliomyelitis like the Dick or Schick tests. In addition there is also the danger that the injection of attenuated vaccine may produce the disease. There is also the difficulty of vaccinating other than sick children since the number of the ill involved is relatively small, usually isolated, and people become disease-conscious usually only during the presence of epidemics, when it would be almost impossible to confer active immunity in time to prevent the disease.

Immune or convalescent serum has been widely used in the past as a treatment for the active phase of the disease. Many recent tests have indicated very few effective results in series with proper controls. H. Pette and E. Hampel[2] attempted to throw some light on this question by experiments on 46 monkeys, giving 65 injections (18 intracerebral and 47 intraneural) of both single and mixed strains. After injection it was found to be impossible to protect the animal by the use of mixed immune serum from numerous convalescent cases. However, if given at the same time the incubation period was increased from the usual incubation period of 6 days only in two cases, one to three weeks and the other to 11 days, but the course of the disease in all cases was influenced in no way. When smaller amounts of virus were injected into the sciatic nerve of 30 monkeys—this conforms more to the intraneural mode of infection in the human—it was found that the incubation period was lengthened. In some of these it was felt that they were protected partly by the use of serum. The results from these experiments indicate possibly the reason for the variable reports received from the use of serum therapy in human poliomyelitis.

IT would therefore seem that at the present time there are no specific modes of attack upon this disease. Some believe that small transfusions may be of some value in either modifying or preventing the disease in view of the fact that most adults seem to have immunity to this disease. Spinal puncture may be of value not only for diagnosis but to relieve pressure and meningeal irritation. The injection of 25-50 per cent hypertonic glucose solution is also of value for the same reason. It must be remembered that many of the initial paralytic signs are due to the edema present in the anterior horn cells, leading to greater destruction of motor nerve cells than might occur if the edema is decreased by glucose or sucrose injections intravenously. Forced spinal drainage has been reported as of value though most clinicians are doubtful about this. Suction of the nasal contents may also help to prevent the further absorption of virus. Our chief form of treatment at present, however, unfortunately is concerned chiefly with the prevention of the spread of paralyses already present. Rest here is most important, especially absolute rest of the affected limbs by means of various orthopedic appliances. The importance of this cannot be too strongly stressed. Complications may arise such as respiratory paralysis requiring the use of respirators, and pharyngeal paralysis requiring tube feeding. Less serious are retention of urine and marked constipation.

—Concluded on page 126

PELVIC INFLAMMATORY DISEASE COMPLICATED BY PELVIC ABSCESS AND *B. COLI* SEPTICEMIA

Case Report

Reported by

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THE object of presenting this case of pelvic inflammatory disease, complicated by pelvic abscess and septicemia, is to demonstrate the various phases of the illness, the procedure of its management and the results obtained.

E. C., a 22-year-old, married female, Grav. IV, Para III, was admitted to the 2nd Division Surgical Service of Morrisania City Hospital on May 6, 1939, complaining of bilateral low abdominal pain of 5 days duration ushered in by a mild chill. The night prior to admission, following the ingestion of food, she vomited twice. The vomiting was preceded by considerable nausea. She gave a history of frequent urination with no dysuria or hematuria. Four days prior to admission the patient took a liberal dose of castor oil which was followed by loose bowel movements. One month prior to admission the patient had a spontaneous miscarriage of a 5 months pregnancy. She was then hospitalized for 2 weeks, and when she left the hospital she was afebrile and symptom free. There has been a history of vaginal discharge of 3 years duration, the onset following the delivery of her 2nd baby. Her menses always have been free from molimena. Following the miscarriage she had a lochia for several days which cleared away. There was slight vaginal spotting the day prior to admission. Her past history was otherwise negative.

May 6th, 1939:

Patient entered the hospital.

Physical Examination — Revealed a pale, toxic, thin, adult white female.

T—102.6° P—120 R—24/-min. B.P.—125/60

Head, Eyes, Ears, Nose, Throat — Revealed no abnormalities other than marked pallor of the conjunctivae, lips and buccal mucous membranes.

Neck—Freely movable. Spasm of muscle absent.

Heart—Sounds were of good quality, regular rhythm, although moderate tachycardia was present. No bruits were heard.

Lungs—Revealed no adventitious sounds.

Abdomen—Moderately tense throughout. Tenderness and rebound tenderness prevailed in all quadrants, although of a more severe nature in

both lower quadrants. There were no palpable masses at this time.

Pelvic—Examination revealed a normal introitus. The cervix was slightly tender to the touch. The fundus uteri was anteflexed, slightly enlarged and tender. Marked tenderness prevailed in both fornices, more so on the left side, and a palpable thickening was present there. In the posterior cul-de-sac a very tender, indurated mass was felt. This was also felt rectally.

Extremities—No abnormal findings.

Laboratory Findings:

Vaginal smear—Negative for Neisserian infection.

Blood count on admission was as follows:

W.B.C.—Total count—16,950

Polys	93%
Lymphocytes	6%
Monocytes	1%

Hb.—58%

R.B.C.—2.84 Million

Urinalysis—Negative.

Diagnosis: Pelvic Abscess.

Patient was put to bed in high Fowler's position with an ice-bag to her lower abdomen. A continuous infusion of 5% glucose in saline was given. Sulfanilamide—grs. 15 every 4 hrs.—was begun in conjunction with morphine. She received small quantities of fluid orally in the beginning. As she improved with the chemotherapy the sulfanilamide was diminished. Temperature varied between 101°-102°.

May 9, 1939: Patient received 500 cc. of citrated blood; followed by severe jaundice. The sulfanilamide was immediately stopped, and a review of the blood picture showed a total white blood count of 14,300 with 84 polys; the hemoglobin being 60% with 3 million R.B.C. Within several days the jaundice subsided.

May 13, 1939: The condition of the patient remained the same. A vaginal examination was made and a fluctuant mass could be felt in the posterior cul-de-sac. Under gas and oxygen anesthesia a posterior colpotomy was done, and about 60 cc. of foul-smelling, yellow-green pus escaped. A rubber tube drain was inserted into the abscess cavity. The culture showed *B. coli* and staphylococcus.

May 14, 1939: Abdominal examination revealed a large, tender, globular midline mass extending up to the umbilicus. Temperature was spiking between 98.6° and 103° with very little drainage.

May 16, 1939: 3rd day postoperative. Patient appeared restless. Temperature began to fall, following moderate drainage per vaginam. The abdominal mass at this time receded somewhat, and the patient clinically appeared improved.

May 23, 1939: 10 days postoperative. Patient appeared restless. Temperature began to rise, reaching 104° in the evening. The morning of the following day the patient had a severe chill and looked toxic. 500 cc. of citrated blood was given. Toward the evening the patient appeared critically ill, perspiring freely, with a temperature of 107°, pulse 148/min. of fair quality, respirations 26/min. The mass in the abdominal cavity though smaller in size was still present.

The patient was taken to the operating room, and under gas and oxygen anesthesia the opening into the abscess cavity was found to be ample. The drain was re-inserted. Patient was sent back to bed. Postoperative treatment consisted of continuous infusion of 5% glucose in saline, with neoprontosil, hypodermatically administered. Blood culture was taken. At this time temperature was 106°. Another transfusion of 400 cc. of citrated blood was given. Report of blood culture 2 days later was positive for *B. coli;* the broth showed a moderate growth. Another culture taken at the end of 48 hrs. showed 2 colonies per plate.

May 27, 1939: A specific treatment was instituted with *B. coli* bacteriophage, intravenously, beginning with 1 cc. of the dilution 1:10. The dosage was doubled after 45 minutes, and increased every 45 minutes thereafter by arithmetical progression until 10 cc. of 1:10 dilution were given. Then 1 cc. of undiluted phage was given and increased as with the diluted until a total of 40

cc. of undiluted phage was given.

May 28, 29, 30, 31: The toxicity of the patient diminished. The temperature averaged 100°-103°. Chills were absent. Another culture was taken and the report was positive for *B. coli* (1 colony per plate). The isolated organism from the last culture proved to be non-hemolytic *B. coli* (*Escherichia acidi lactici*), only slightly susceptible to specific bacteriophage; therefore on

June 1, 1939: Another course of stock phage was given as before. The following day the patient appeared less toxic; the general condition kept on improving and the highest temperature reached toward evening was 100.6°.

June 3, 1939: The abdominal mass during the administration of the phage gradually receded and at this time could no longer be palpated. The temperature had completely disappeared. Blood culture taken 48 hrs. following the second course of phage was negative. The patient began to have an appetite, and her general condition improved.

June 6, 1939: Patient apparently comfortable; ate well; slept well. Abdominal examination: Tractable throughout; neither pain nor tenderness could be elicited on deep palpation. No masses felt. Vaginal examination revealed a normal cervix. Uterus anteflexed, slightly enlarged, mobile and deviated to the right of the mid-line; both fornices and cul-de-sac were negative. The patient's general and local condition improved. Another small transfusion of citrated blood was given.

June 11, 1939: Patient was discharged.

According to the observations of R. Roch and Prof. Lemierre (*Annales de Médecine*—vol. 44 —1938, pp. 271-292), the colon bacillus can invade the blood stream and grow there only in debilitated states. They call the colon bacillus "le microbe de sortie," which leaves its normal habitat in the intestines and enters the blood stream only when the general body resistance is lowered.

This manifestation is true, although the original strain of bacterium causing the primary infection may be one other than *B. coli.*

In summation—the colon bacillus may invade the blood stream when the general resistance of the patient has fallen so low that the blood stream cannot cope with *B. coli,* normally present in the intestinal tract. Bacteriologists frequently report the finding of bacteria in the blood immediately after death.

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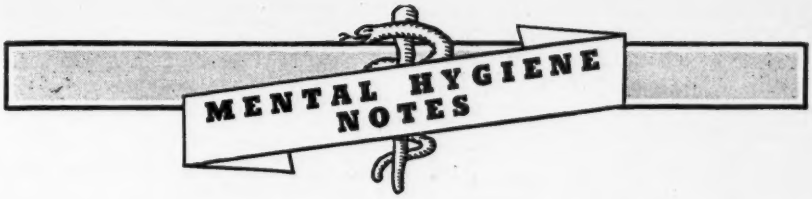

CASE NOTES IN EXTRAMURAL PSYCHIATRY

Incipient SCHIZOPHRENIA

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WITHIN each person there are several opposite tendencies and therefore conflicts. We are never perfectly adjusted to society and to life. There is the conflict between, on the one hand, our more or less subconscious desire to return to a more primitive stage of society, and, on the other hand, the necessity to live in our huge and complicated and bewildering human society. In a very simple social life the individual was much less submerged than he is and must be at present. The schizophrenic returns to relative isolation, to primitivity, to individualism, to a comparative asociability. He rebels against extreme adaptation, of which he is incapable. This is the most evident tendency and probably the most plausible explanation of his illness, which is a regression psychosis.

WE want adventure, poetry, romance, but society, life, nails us down, gives us duties, curtails our freedom. We also want to settle down. This is not only a conflicting desire, it is a necessity.

We are torn between a strong wish to live and a feebler, but constantly present and often quite apparent, inclination to get rid of life, to die.

We cannot stand being inferior and there are few people who are not aware of some inferiority. If they adjust themselves to it they are normal. If not, they become psychopathic —to a higher or lesser degree.

Society and obligations would be acceptable to all but the extremely abnormal persons, if they were not frustrated, if their personality were respected, if in exchange for giving away their individuality they were compensated with material and moral comfort. Conflicts arise from lack of such recognition — and some of us succumb mentally.

Schizophrenia is probably a result of all these conflicts acting simultaneously on some predisposed persons. When further advanced it is a discordant psychosis, incorrectly called dementia praecox.

It is a disease of—or it begins at—an early or adolescent age mainly, but by no means exclusively. Real dementia or failure of the mental faculties occurs in the extremely deteriorated patients only.

WE should not conclude from the above remarks that isolation, while explaining the mechanism of the disease, is a cure for schizophrenia. Usually it is not.

In the following case, which is a very simple one, the patient's struggle to overcome his difficulty has been comparatively easy and the result apparently permanent. In more advanced cases this would be almost impossible. That is the reason why psychotherapeutic treatment must be started in the earliest stages, if possible.

A man of twenty-nine, single, compositor by trade, came to our Clinic, complaining that:

"He is scared when on a job, always fearing that something will happen, always under tension, cannot make friends, and that some force unknown to him keeps him away from people."

From September 15, 1930 until April 17, 1931, when he was presented to the Staff meeting of a psychiatric institute, I saw this patient fifteen times.

Brought from Europe to New York at the age of seven, he went to public school and later also partly to high school; then to evening trade school; had a machine course, becoming at last a compositor after having learned the printing trade thoroughly

Conversing with him, one discovers at once that he has read a good deal, has followed lectures, has been alive to the important questions of the day. He seems to be more informed in a general way than is usual among men of his station in life.

He had been working since the age of fifteen, at printing for the last nine years. Earning enough for himself.

In addition to the above complaints he says: "I feel that I was never at the height of my job, that I was paid for more than I was worth", although, as we learn, no one of his employers was ever dissatisfied with him.

He does not like people and has had relatively very few contacts with them. He is even afraid of them.

In the print-shop he is often the page-maker. Although he knows linotyping and monotyping, which would pay more than he earns at present, he does not work at them because he has no faith in himself.

He has never had a bad attack, his condition being practically always the same as now, even in his childhood, although lately it is getting worse. When asked why he is afraid of contacts, he says that he fears somebody might see what he desires not to be seen, that is himself.

His work as a printer brought out this fear more clearly because there was a responsibility and a need for accuracy. He hates all jobs and wants to be lost in the world, to remain unnoticed. He prefers walking around aimlessly. He has a feeling that someone may come too close to him and investigate him. Feels well among crowds, where he is unobserved. Always fears to get into trouble, although in actually dangerous situations he has no fears.

Avoids society. He may like a new acquaintance, but as soon as he feels he will be too well known, he breaks up the friendship. He laughs but rarely, tells no jokes. Sees friends "for politeness' sake", but is bored by them and there is no exception to this rule.

Lately patient has given up his work altogether and is "drifting more or less", as he says. Is indifferent to his fate. He would be able to get back his old job or to find another one, but does not care. At work he always feels he will be "noticed and seen" by his fellow-workers—and that is something he cannot endure.

He says he wants to be a spectator in life and let others do the acting.

In childhood, despite the fact that he had full freedom to play and although his parents' house was visited by many people including children, he did not like to associate with them.

Whatever he did at any time was a surprise to him, as if it "belonged to or was done by someone else."

He remembers that in school he was also reserved with his teacher, although she was nice to him. He avoided his schoolmates and altogether played but little and rarely.

Patient never accepts kindnesses and resents too much friendship. When buying something he would pay more than the price asked, because he feared to be favored. It was ever his dream or hope to have much money, "let us say a hundred thousand dollars", and to repay his mother for feeding him in childhood and all the schools where he had studied, *so that he owe nothing to anyone.* At the same time *he would do no favors to others.* He desires to be "a disembodied spirit". He has a contempt for people in general. Life seems haphazard. He feels there is no goal in life and he himself has neither order nor aim in his own life: "My life is a chaos". Patient uses very frequently the word "aversion" and, when trying to convey an unpleasant thought, his face expresses a very exaggerated disdain.

He belongs to his trade union, although he is indifferent to it. He joined because he had to do so to improve his economic condition, but feels he is cheating it. He entered it "in order to take and not to give", which he regards as being wrong. He always seeks something beyond what he finds.

He also has *physical complaints:* "Something is upset in his stomach". He feels weak, is constipated and has a poor appetite. Has always been slim and underweight.

At the age of one year he was very ill, was expected to die, but does not know what the illness was. As a child he once made a fire and burned himself badly. Does not remember at what age. There are large scars on his hands and other places.

Patient's *father* died of pulmonary tuberculosis at thirty-five. *Mother,* living, is fifty-four, in good health, but seems to be as shy as our patient. She went through a period of mental depression after her husband's death. She is working in a factory, likes her work and makes a living for herself. Patient has forgotten his father entirely, although he was nine years old at his death. When his widowed mother started to work patient went to live with his grandmother, apparently a normal person, until he grew up. There are two brothers, thirty-two and twenty-six. A third one died at four. There is no known case of mental disturbance or maladjustment in the family, except one sister of patient's grandmother on his mother's side, about whom he has vaguely heard that she died in an insane asylum.

Patient's general *intelligence* is above the average. He has no feeling of inferiority. On the contrary, he rather feels that he is *too good* for most people he meets. He reads much, but it is no pleasure. He has read a good deal of literature, but lately he is mainly interested in psychology. He is not certain, however, that he is learning anything from books, just as he thinks he has not learned much in school, which is in keeping with his tendency not to take things from anywhere or at least not to admit that he does or did. He only reads "to kill time". He understands perfectly well what he is reading and is engrossed in it while doing so, but forgets it as soon as he finishes. He has just read a book by Adler. Has given up going to the theatre, because it bores him.

He avoids *sex* relations. Has had some, a very few times, with prostitutes, but it gives him a sense of revulsion. Never had a girl. His sexual urge is vague. In the rare cases of contact with women he feels "cheated" (a word frequently used by this patient), as if he were looking for "something beyond sex intercourse." Has no homosexual inclinations.

He speaks perfectly well, very correctly, answers questions rationally. Has no hallucinations of any sort. Does not know whether he dreams, rarely remembering it. Orientation is good. Memory for recent events and objects rather inferior. Is unable to count backward without mistakes. Has forgotten a good deal of his previous knowledge: Egypt is in Asia. Nor does he seem to care much. He remembers the details of the war of 1914 thoroughly and is well posted in recent historic facts.

Physical examination shows nothing abnormal.

A well-known psychoanalist, under whose treatment he has been for several months, has tried to psychoanalyze him in the usual way, but failed. Nor was there any improvement. "It was boring, it was a torture," he says.

The diagnosis was easy to make. While not a fully developed or advanced schizophrenia, there was a strong tendency toward it. I was dealing with a *schizoid* individual just a little more pronounced than many, almost normal, but so-called "queer" people, who are more or less dissociated from their surroundings. There was an admixture of hypochondriasis.

The *first thing* done in this case was to interest the patient in his physical welfare. He was shown how he could improve his general condition by taking care of his body. As he wanted to get well, I explained to him, he must see that the foundation be strong, or at least stronger than it was. The value of *gymnastic* exercise was pointed out to him and he was urged to join a gymnastic class. Of course, I also corrected his dietetic errors.

Then our *conversations* began. When I say "our" conversations, it is not entirely exact, because in reality I often only provoked him to talk, which he did, freely, continually unburdening himself of his disturbing thoughts, feelings and fears which he had at the moment and of those which he had ever had in the past. Most of the time I was nothing but a neutral registering apparatus. Only later, much later, did I make suggestions or try to influence him. Patient never realized that he was analyzed, that he analyzed himself. He would have scoffed at real analysis, which he finds "foolish and ridiculous." Only a long time after this phase the examiner, at opportune moments, began to encourage him and to give him hope. Perhaps it is best to call this procedure a *substitute for analysis*, as adapted to the Clinic.

Patient's experience with the gymnastic class is interesting. He went there very reluctantly and could not see how he would ever work with other people. He found it silly and unnecessary. But urged on by me, he continued and did it with greater and greater conviction as he saw the good effects. After a while he found it not only possible to exercise, so to speak, in public, but even sensible and, feeling a real *improvement in his physical condition*, he went on with more and more impetus. His appetite was better, his chronic constipation disappeared and he gained weight. He began to trust me and, what is more important, to have confidence in himself. Soon, he said, he liked it and that was the *first time he liked anything*. Following my advice he also went swimming in a pool, where, at the beginning, he had great difficulties, but where he is now going with pleasure and more often than at first. An interesting detail: There was a time when he was unable to tell the swimming teacher "good evening," or "thank you," although he felt like doing so. There was the usual barrier, or *wall*, as he always calls it, *between him and the world*. The reason given by him was that he would hate the teacher to think that he, the patient, wants to "get around him or to flatter him." But lately he says "thank you" and whatever is necessary, easily and without embarrassment.

The first time patient acknowledged a slight amelioration in his mental state was on December 5th, approximately two and a half months after his admission to the Clinic. From then on the improvement was steady. He felt, he stated, an affinity with other people and became interested in his body and in the appearance of other people's bodies. On December 19th he spoke more rationally and with greater energy than at any time during his visits before.

At around that date he said he used to deny the needs of the body because he had the idea that there were two forces, he and the outside world, and, as everything was futile and he could not associate with others, his body had to be the victim.

In one of our conversations, he reminds the examiner, the latter spoke about the irrational attitude of withdrawing from a world in which one is a part and about the fact that the particle of individuality that each person possesses is gained by living with others. (By the way, this was one of the very few critical remarks made by the examiner.) That made the patient think and brood. And, when listening to a lecture on "humanism" soon after, he discovered there something similar to what he had been told by me. Then, his entire being, he said, *"opened up."* He gave a beautiful and vivid summary of that lecture, which he had been unable to do before, as he had been indifferent to everything he used to hear and read. Until two weeks previously he "failed to realize where he was living." His eyes were covered with a veil, as it were, he states. He could not meet people, because he felt that he must not only take but give as well, which was an impossibility to him. But now he does not mind mixing and giving. He feels he would now answer from the platform a labor leader in his trade union when the latter contradicted himself and was wrong—something he never cared or hoped to do before.

At a later date he says: "I am looking into the mirror and am astonished to discover a new person. I am asking myself who I am. During the last days I am so enthusiastic that I keep on talking all the time. I used to feel like an outcast, or an enemy of other people. Everything in the world was but a scenery for myself. But not so now. It is all changed. I see things differently. I still feel awkward or em-

barrassed at times. I have to overcome the feeling that I am a stranger. But my distrust is disappearing and *I have an urge to live and to be like others as I never knew before.*" Patient speaks with passion and not in the monotonous, colorless manner in which he used to speak at the beginning of his treatment. Sometimes I notice that he has unconsciously appropriated some of my words and is using them as his own. But I am not pointing that out to him.

He still feels clumsy in the gym class, but is enjoying it. All his physical symptoms have left him.

This change and amelioration was particularly agreeable to the examiner because a short time after becoming acquainted with the patient, I had made up my mind that the prognosis must be bad and that the talks could only retard the final attack.

On December 19th the patient was desirous to go back to work, but I advised him to refrain from that, as it was too early and the result might be unfavorable and discourage him altogether. On January 2nd patient shows more improvement. He says "It seems that I am approaching people better and more than I ever have. I always ignored festivities and gatherings, whether happy or mournful. A week ago I actually desired to go to a wedding and I enjoyed it. This is the first time that such a thing has happened to me." Patient is absolutely convinced that he is feeling better, that he has improved considerably and he intends to go back to work. As he puts it: "It is a process of *elimination* and, as it may take a long time, I don't want to wait. I don't want to stay idle."

He is allowed to work and finds some short period jobs at his trade which he performs satisfactorily both to himself and to his employers. Now, within a few days, he expects to get steadier and longer occupation, and therefore, he may not be able to call as often as before to our Clinic.

On January 30th he says: "My improvement is making rapid progress. I am in good physical shape and mentally relaxed. My fears are going away." He no longer has "that jerk around the heart and the pain in the stomach" which he used to have. Instead of being reluctant to gymnastics and swimming, he is now a subscriber to a brancn ot the Y.M.C.A. and is doing both the general exercise and the swimming seven times a week, which is more than I want him to do. Of course, there is still some *indifference* to the work, but the *hostility* to it seems to have disappeared. He used to resent when friends were telephoning, and even the door bell. He hated the idea of being disturbed from the outside. Now he does not mind when anybody calls up or when friends come to the house, talk and sing, and play cards.

He sees that he can become normal. He is convinced of that, he says, while in the past he was sure that was utterly impossible. Only at work he does not always feel secure. "My old fear," he says, "had become set like a reflex and now all I have to do is to go back and undo it."

On February 27th, he states: "I am a different person. The wall has collapsed. Now I have a craving to talk and *I am in contact with people.* My inhibitions are gone." On March 6th, "all people seem to be interesting." Now he *never cares to go out alone*, which is a complete reversal of his previous condition. As he puts it: "Before I was chasing the people, now I am chasing after them."

He was suffering from stomach trouble, as he says, all his life, but it is all gone "since his treatment here."

In conclusion, at that staff meeting, a few days before the patient entered a full-time job in a new shop, I said that I was not over-optimistic, that I was aware of the fact that the treatment was incomplete and that a change toward the old condition was possible at any time. I added: "Patient seems to have been put *on his way* toward a recovery and I expect to follow this case up and see him when occasion will arise."

Since that time and until now, 1939, I have given the patient several consultations, about three a year. In one year, when he had a slight relapse, he came seven times. He is almost normal, *working, quite adjusted.*

Within the last year, I have learned this man —for we cannot call him patient any longer— is managing quite successfully a large shop in which he is one of the partners.

207 WEST 106TH STREET.

THE RETURN TO BLEEDING

The treatment of *polycythæmia vera* with hæmolytic drugs such as phenylhydrazine has declined in popularity. The operation of bleeding has now been so simplified that this old-time rational therapeutic method has returned to favor. Stephens and Kaltreider (1937) claim to induce remissions of as long as two years by bleeding to the extent of 500 c.cm. at intervals of one to three days until the hæmatocrit corpuscular volume is normal.

—Lionel E. H. Whitby, M.D.
The Practitioner, October, 1939

Male and Female
CREATED HE THEM

(a scientific elucidation)

MAX HUHNER, M.D.
New York, N. Y.

THE above quotation, which occurs in *Genesis,* I. 27 and V. 1 is, as a rule, interpreted symbolically by most writers.

It is the intention of the present writer to show that there is nothing poetical or symbolic in the above assertion, but that modern science, in fact very modern or recent science, has proven the statement to be a definite fact.

ACCORDING to evolution,[1] for instance, it has been proven that the ancestor of the human race was a hermaphrodite, namely, a being in whom the male and female were united in one single individual. This is the condition in most members of the vegetable kingdom today. As evolution advanced, the sexes were separated, and two distinct individuals, each of a different sex, were evolved. So that the statement "male and female created He them" is fully in accord with evolution.

But we do not need to go back to prehistoric time to prove the truth of the statement. Only within the last few years it has been demonstrated that every child born today and every man and woman living today is both male and female. We now know that in every *female* there is present the female sex hormone, a peculiar chemical ingredient which has much to do with giving the female characteristics to the woman, not only anatomically, but also physiologically and psychologically. Similarly in the *male* there is present in his blood male sex hormone, which has the same action for the male as the female sex hormone has for the female. These sex hormones are not theoretical ingredients which have simply been reasoned out, but are actual chemical compounds which can be demonstrated in the blood of the individual by careful chemical analysis.

THE most interesting phase of this situation has only been brought to light very recently, namely, that in every *female,* besides the presence of female sex hormone in her blood there is also found a certain amount of male sex hormone, and in every *male* there is also found in the blood a certain amount of female sex hormone. It has been further demonstrated that as long as the ratio of the two opposite hormones in any individual is within certain definite limits, he or she is a normally sexed individual. Contrariwise, it has been demonstrated in certain inverts, that is, individuals with sexual longings for their own sex

(1) Darwin, *Descent of Man,* p. 164.

rather than for the opposite sex, the ratio of the sex hormones in the blood is markedly altered. Thus for instance in a male invert, it has been found that the amount of *female* sex hormone in his blood is much greater than that of a normal *male* and likewise with the female invert with respect to the male sex hormone. The development of this phase of the subject is so very recent that we have little clinical material thus far, but in a few cases it has been shown that the artificial addition of some of the normal sex hormone into the blood of an invert has resulted in a definite improvement or cure of the inversion. The reason that cures are not more frequent is the fact, often brought out at operation and at times on autopsy, that some of these inverts have in addition to their own sex organs, parts of the sex organs of the opposite sex, and these are continually pouring hormones of the opposite sex into their blood. We can thus conclude that the statement "male and female created He them" is also fully in accord with the most recent developments of human anatomy and physiology.

NOW, considering all this from a physiologic standpoint, it has long ago been demonstrated that there is no such thing as a *perfect* male or female. Each *male* has some feminine characteristics and each *female* has some *male* characteristics. As long as these characteristics do not partake too much of the opposite sex the condition is strictly normal. *This should not surprise us, because each male and each female is the product of cells of both sexes, and so, naturally, inherits characteristics from both parents.* It is only when the characteristics of the opposite sex go too far that we have the abnormal individual such as the mannish woman or the sissyfied man or even the invert. It is therefore not only true that we were originally created both male and female but also at present *every individual is created male and female.*

THE great poet Shakespeare, who was the most astute observer of men and women that ever existed, has brought out this peculiarity in several of his plays. Of course he knew nothing of male or female *hormones* but, with his wonderful power of observation, he has fully described this condition in some of his plays from which I give a few instances that come to mind.

In Hamlet, for instance, when Laertes is suddenly informed of the tragic death of his beloved sister, he breaks out in tears. He tries, however, to restrain his tears for he believes it is unmanly, in fact, decidedly womanish to shed tears, but must finally give vent to his emotions in the following exclamation.

"Too much of water hast thou, poor Ophelia,
And therefore I forbid my tears; but yet
It is our trick, nature her custom holds,
Let shame say what it will; when these are gone
The *woman* will be out." [*Italics mine*]

In Henry V we have a similar situation. When the Duke of Exeter reports to the King the deaths of the famous generals York and Suffolk, how he came upon them in their death agonies, and how the Duke of York embraced and kissed the dead body of the just deceased Duke of Suffolk who was his life long friend, the Duke of Exeter could not restrain his tears from this sweet but pathetic scene. Here again, as a great general, and used to war's tragedies and horrors, he considered it unmanly to weep but nevertheless he did so with the following exclamation to the King.

"The pretty and sweet manner of it forc'd
Those waters from me which I would have stopp'd;
But I had not so much of man in me,
And all my *mother* came into mine eyes [*Italics mine*]
And gave me up to tears."

King Henry, on merely hearing this pathetic recital, almost went into tears himself.

IN King Lear a somewhat similar situation presents itself. King Lear having been most outrageously abused by his

daughter Goneril, breaks into tears and exclaims

" Life
and death! I am asham'd
That thou hast power to shake my *manhood* thus,
That these hot tears, which break from me perforce,
Should make thee worth them."

[*Italics mine*]

In an essay entitled "A New Aspect of Shakespeare's Conception of Woman" (*Poet Lore,* Spring, 1921) I pointed out that in the scene depicting the murder of the Duke of York (Third Part of King Henry VI, Act I, Scene 4), Shakespeare almost makes a transference of sexes, for his males weep while the female character is bitter, harsh and scornful.

I have not perused all of Shakespeare's works for the sole sake of finding similar situations, but I have no doubt they occur and the above examples were but a few which came to my memory. As a matter of fact Shakespeare is full of illustrations of women with distinctly masculine characteristics.

I HAVE said at the commencement of this essay that most writers give a symbolic interpretation to the quotation "Male and Female Created He Them." For instance Rabbi Hertz, the grand Rabbi of Great Britain, states that the meaning of the passage is that man and wife are equal and on the same level, while Rabbi Herbert S. Goldstein explains this sentence as follows: "Man and woman are the complement of each other. Not mastery of one over the other, but cooperation is the keynote of the relationship between man and woman."

It is interesting to note, however, that glimpses of the bisexual creation of man and woman are found in ancient literature, but when found, such theory is definitely denied by the commentator. Thus Rashi (1040-1105), one of the greatest Biblical students, says that according to a Midrashic explanation (*Erub,* 18a) God created the first human being with two faces but afterwards divided them. Rashi in commentating on this Midrashic explanation distinctly says that he does *not* concur with this explanation but believes that both the male and the female were created on the sixth day. The method of creation, however, is not mentioned till later on.

The *International Critical Commentary* (Scribner's 1910, page 33) says "The persistent idea that man as first created was bisexual and the sexes separated afterwards (mentioned by Rashi and recently revived by Schwally, ARW, IX, 172,) is far from the thought of the passage."

A VERY interesting commentary is found in the writings of Friedrich Schwally in Giessen under the heading "Die biblischen Schöpfungsberichte" and published in the *Archiv. f. Religionswiss.* in 1906. This is the article referred to in the above mentioned magazine. In this article the author says that man was originally male and female, but he bases his opinion not on any scientific fact but claims that the Bible story is simply a myth and cites other examples from ancient writers showing that such myths occur in other ancient narratives. He shows, for instance, that the old Persian conception was that human beings were originally hermaphroditic and were later separated. He also shows that the ancient Babylonic idea was that men and women were originally hermaphroditic. He also quotes Plato to the same effect. In Plato's version there were originally three kinds of humans, namely, Double Men, Double Women, and Men Women. Then Zeus divided each into two and turned their faces towards the incision side. This did not work out well and Zeus out of pity then turned their faces around.

Schwally says that if instead of "rib" we read "side" then the later creation of Eve becomes evident, namely, first they were hermaphroditic, then they were separated by an incision through the side. However, the whole discussion by him is of no scientific value, for he considers the whole story of creation as mentioned in the Bible a pure myth and believes the writer of the Bible simply followed or copied the other similar myths from ancient writings as just quoted.

It is interesting also to note the views of the Shakers, a community founded about

1758 by Ann Lee or Lees. As is well known, the most outstanding doctrine of this community is absolute celibacy. One of their chief arguments in favor of this doctrine is the very quotation just mentioned, namely, "God created man in His own image, in the image of God created He him, male and female created He them." From this they conclude that God was a hermaphrodite and that Adam was also a hermaphrodite and that therefore sex relationship is unnecessary. They further claim that Christ is the spirit of God which appeared first in Jesus, a man, and second in Ann Lee, a woman.

WE note, therefore, that although the theory of the bisexual origin of mankind is found from time to time in ancient writings, it was always denied by the great scholars of the time. This is the first attempt to explain the passage on a modern scientific basis.

We may, therefore, conclude that the story of the creation of man and woman as mentioned in the Bible is fully in accord, not only with evolution, but also with the most recent discoveries in blood chemistry, as shown in the male and female sex hormones.

88 CENTRAL PARK WEST.

CONSTITUTIONAL INADEQUACY

Much of the disease and disability which the internist sees each day is due to a constitutional frailness, or biologic inferiority of the patient's body. The "contractor seems to have put in such poor materials" that throughout life one organ after another keeps breaking down. The oculist may do his best for the patient's weak eyes, the orthopedist may fit a brace to the weak back, the gynecologist may inject ovarian extracts, the cardiologist may treat the palpitations, and the gastro-enterologist may give diets and belladonna, and all that results is that the patient goes next to the urologist with an irritable bladder or to the allergist for a stuffy nose.

—Walter C. Alvarez, M.D.
J. of the Med. Soc. of New Jersey, November, 1939

ANTERIOR POLIOMYELITIS

Concluded from page 115—

AFTER the acute stage is over the paralyzed parts may require considerable treatment. It is felt that if no improvement has occurred in six months the hope for recovery of their use is not very good. Massage and electrical treatment during this stage are helpful. Orthopedic surgery here has a wide field of usefulness not only in the use of splints to prevent deformities but in corrective surgery such as tenotomy and tendon lengthening, tendon transplants, and the use of arthrodesis to make a useful limb instead of one with a flail joint.

Summary

1. No specific therapy of proven value exists either for the prophylaxis or the treatment of human poliomyelitis.

2. Treatment consists in the main of general and symptomatic measures.

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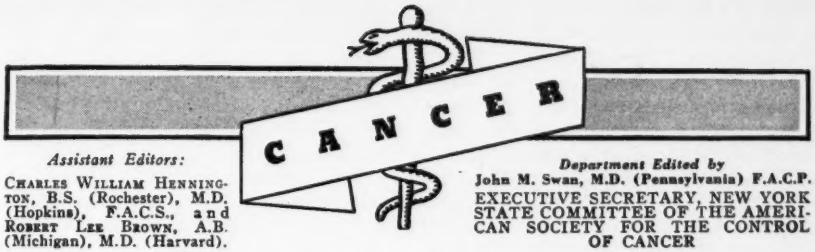

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Cancer OF THE DIGESTIVE TRACT

CANCER of the digestive tract is the most difficult item in the practical solution of the cancer problem. In New York State [5] in 1937 there were 19,618 deaths from cancer. Of these deaths 9,780 were due to cancer of the digestive tract (49.85 per cent). These cases were distributed as follows: esophagus, 546; stomach and duodenum, 3,409; intestine (except duodenum, rectum, and anus), 2,441; rectum and anus, 1,449; liver and biliary passages, 1,149; pancreas, 623; mesentery and peritoneum, 159; others, 4.

It is pretty generally admitted that the death certificate diagnoses are not accurate. In all probability every case of cancer of the mesentery and peritoneum is metastatic and the primary seat of the neoplasm should have been stated in the certificate. Many cases reported as cancer of the liver are also metastatic. Karsner [4] quotes the statistics of Counseller and McIndoe [1] who found primary cancer of the liver in 0.14 percent of 42,276 autopsies.

In view of the importance of cancer of the digestive tract every effort should be made to spread widely every constructive contribution to the literature designed to encourage the general practitioner to keep cancer in mind. Particularly is this so when he is consulted by a patient in late middle life, who complains of indefinite digestive disturbances.

To this end we think it important to give a rather long abstract of the recent paper by Sir Arthur Hurst.[3]

Carcinoma of the Esophagus is usually primary in the postcricoid portion of the pharynx, whence it extends to the esophagus and to the lower portions of the tube. In the former cases the patients are almost exclusively women and the neoplasm develops in an atrophic mucous membrane and is accompanied by dysphagia, anemia and splenic enlargement (Plummer-Vinson syndrome).

Below the cricoid region the commonest situation for primary carcinoma is at the extreme lower end of the tube and the next most common situation is opposite the bifurcation of the trachea. In both these locations the caliber of the esophagus is smaller than in its other portions, consequently there is more likelihood of stasis.

Malignant degeneration of the atrophic mucous membrane in the upper esophagus develops comparatively rapidly. On the other hand, in the lower part of the tube the stasis of the mixture of food and saliva readily becomes infected and the irritating products of fermentation and putrefaction cause inflammation and ulceration of the mucous membrane. The ulcer may heal, to

be followed by epithelial hyperplasia with the development of leukoplakia and small wart-like nodules and squamous cell carcinoma.

There is no record of a case of hypochromic anemia with upper dysphagia, adequately treated, developing cancer. On the other hand, excessive use of alcohol and tobacco should be avoided, because when continued over long periods they may act as carcinogenic agents. Since the effect of the irritation resulting from the excessive use of these agents is cumulative it is never too late to advise alteration in the habits of the patient in these matters.

Cancer of the Stomach Treatment is purely surgical. The onset is so insidious and the diagnosis is often so difficult that even with the earlier and more general use of the most modern methods of investigation, including gastroscopy, it is doubtful whether the most skilful surgeons will ever increase the five year survival rate after operation much beyond the present maximum of 5.0 per cent for all cases, including the inoperable. It is clear that we must look to prophylaxis as the only hope of lowering the mortality from this disease.

The first essential for the development of cancer of the stomach is an intrinsic factor —the individual's constitutional susceptibility to cancer in general. The second is a constitutional and inherited organ inferiority affecting the stomach. But unless an extrinsic factor in the form of chronic irritation is also present cancer of the stomach will not develop.

The author is of the opinion that the presence of free acid in the gastric contents in a case of gastric cancer indicates that the neoplasm is secondary to a chronic ulcer and that achlorhydria indicates that the neoplasm is secondary to achlorhydric gastritis.

CHRONIC gastritis may be primary and the result of chronic irritation of the mucous membrane by swallowed irritants or secondary to acute gastritis. The chronic irritants may be (1) mechanical—hearty meals and insufficient mastication, insufficient masticatory surface and coarse food. (2) Chemical—alcohol, strong tea and coffee, mustard, pepper and other spices, tobacco, and such drugs as aspirin, bromides, iodides and quinine. (3) Thermal—the swallowing of too hot or too cold food and drink. (4) Infective material from septic teeth, tonsils and nasal sinuses.

In 1929 the author presented evidence to show that the achlorhydria in gastric carcinoma was caused by chronic gastritis, which existed before the neoplasm developed as a malignant degeneration of a chronically inflamed mucous membrane. (*Lancet*, November 16, 1929. 2:1023).

The association of carcinoma of the stomach with pernicious anemia has been recognized for many years. Now that it is possible to keep a patient with pernicious anemia free from recurrence indefinitely an increasing number are likely to develop carcinoma as long as nine years after the onset of the anemia and four years after its symptomatic cure.

In view of the facts that the type of gastritis which predisposes to cancer affects the stomach uniformly, that a majority of gastric ulcers are situated on the lesser curvature, and that cancer is commoner in the pyloric region than in other parts of the organ, there must be an additional factor predisposing to the development of cancer in the pyloric region. The author believes that this factor is probably friction.

CONCERNING the prophylaxis of gastric carcinoma, the author believes that since we have no knowledge sufficient to control the constitutional susceptibility to cancer the local occurrence should be controllable by preventing the development of chronic gastritis and chronic gastric ulcer or by the recognition and cure of these lesions at as early a stage as possible, followed by measures to prevent recurrence. The prevention of the development of chronic gastritis and chronic gastric ulcer should be possible by avoiding the irritating substances already enumerated.

One method of improving the prospects of a permanent cure after a successful gastrectomy would be for surgeons to recognize that a local recurrence is more often due to a continuation of the pathological changes in the remaining portion of the

stomach which led to the development of the primary growth than to failure completely to remove the growth itself.

Carcinoma of the Colon The author publishes the following table which shows the percentage incidence of carcinoma of the large intestine.

Large intestine excluding the rectum		Rectum, excluding the rest of the large intestine	Entire Colon including the rectum
Cecum 15 *Ascending colon* 10	25		
Hepatic-flexure 5 *Transverse-colon* 5 *Splenic-flexure* 10 *Descending and iliac colon* 5	25	50	25
Pelvic colon		50	25
Pelvirectal flexure *Ampulla* *Anal canal*		65 30 5	50

The author then enumerates the following precancerous conditions of the colon: adenomata, ulcerative colitis, diverticulitis, and megacolon.

The prophylaxis of carcinoma of the colon consists mainly in the diagnosis and removal of polypi. In all ages proctoscopic as well as a digital examination should be made before making a diagnosis of hemorrhoids as a cause of bleeding. Furthermore, the patient who has had a rectal polyp removed should be examined at least three times a year until no new polyp has appeared for five years.

The physician should remember that constipation leads to far less irritation of the colon than do the purgatives which are commonly employed in its treatment.

Reeducation of the normal defecation reflex, suitable diet, liquid paraffin and nonirritating vegetable mucilage "will cure the large majority of cases of constipation."

IN connection with the attitude of the general practitioner toward cancer in general and cancer of the digestive tract in particular the paper by Cramer [2] should be studied and the facts pointed out should be remembered. He says: "But perhaps the greatest difficulty [in the solution of the cancer problem in man] is the unjustifiable pessimism which pervades the medical profession concerning cancer. We are still being told by distinguished clinicians that cancer is a mystery, that we know nothing about cancer, and that we must wait until the cause of cancer is found—whatever that may mean—when the cure for cancer will automatically follow, which is by no means true.

"CANCER is, unfortunately, a sensational disease; but the prevention of cancer is unsensational work. The physicians who prevent a hundred cases of cancer have less evidence to establish their success than the surgeons or radiologists who cure five, nor will they get for their achievement any credit or financial reward. The results of prophylactic work will become evident only after many years by a careful analysis of the national mortality statistics."

We need an educational program among medical men to establish in their minds the conviction that cancer is largely preventable and that every effort should be made to prevent it.

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POSTOPERATIVE B_1 DEFICIENCY

A hitherto unrecognized danger exists of inducing vitamin B_1 deficiency in patients maintained with parenteral feedings of glucose, as in postoperative conditions. For such patients, this danger can be prevented by the routine administration of 5 to 10 mg. of thiamin chloride.

—Bull. N. Y. Academy of M., Jan. '39.

Sodium Diphenyl Hydantoinate in Treatment of Convulsive Seizures

H. H. MERRITT and T. J. PUTNAM (*Archives of Neurology and Psychiatry,* 42:1053, Dec. 1939) report the use of sodium diphenyl hydantoinate in the treatment of more than 350 cases of epilepsy; all of these patients had been treated by other methods previously, the majority with phenobarbital. The sodium diphenyl hydantoinate is given in capsules of 0.1 gm. (1½ gr.) each; the amount that will prevent the occurrence of seizures without producing toxic symptoms must be determined for each patient "by trial"; in the authors' experience this varied between 0.2 and 0.6 gm. (3 and 9 gr.) daily. It is given in divided doses, preferably with or after meals. Because of the alkalinity of the drug it may cause gastric symptoms; in occasional cases such symptoms have been prevented by giving dilute hydrochloric acid, 15 minims before meals, without diminishing the effectiveness of the drug. Only relatively few patients require or tolerate a dosage of 0.6 gm. daily. In cases where the attacks are known to occur at certain times, sodium diphenyl hydantoinate can be given so that the greatest concentration in the system is obtained at this time. Regulation of the dose is not difficult in patients who are having several or many attacks weekly, but in patients with relatively infrequent attacks determination of the minimum effective dose is more difficult. These patients must often be given more than the minimum dosage in order to protect them in unusual circumstances. The most common toxic symptoms due to sodium diphenyl hydantoinate are gastric disturbances (including nausea and vomiting), nervous symptoms (tremor of the hands, diplopia, ataxia, sometimes drowsiness and headache) and dermatitis. Most patients tolerate doses up to 0.3 gm. or less daily without showing any toxic symptoms. The percentage of minor toxic reactions is probably greater than that with the bromides or phenobarbital but the danger from severe reaction that occurs with high dosage is less. The drug is recommended, therefore, especially for the treatment of those cases of epilepsy in which attacks cannot be controlled by other forms of treatment. In the series treated by the authors, sodium diphenyl hydantoinate proved more effective in controlling attacks than the previous treatment employed in 79 per cent. of cases; in 13 per cent. no form of therapy was effective.

Comment

This drug is an important contribution to the medical treatment of the convulsive states. In the commentator's moderate experience with it, a general brightening of the patient's emotional phase has been noted, with a distinct reduction in the number of seizures. The reviewer recommends that in all patients subject to convulsive attacks this medication be given a thorough trial. The dulling effect observed after long continued use of pheno-

barbital has not been present in patients treated with this medication. *H.R.M.*

Effect of Phenobarbital on the Mentality of Epileptic Patients

E. SOMERFELD-ZISKIND and E. ZISKIND (*Archives of Neurology and Psychiatry*, 43:20, Jan. 1940) report a study of 100 epileptics attending the outpatient departments of two Los Angeles hospitals and not institutionalized at any time during the period of observation. Six psychological tests, including the Stanford-Binet test, showed the mean intelligence quotient to be 93—7 points lower than the generally accepted normal average. Most mental traits were normal except memory, attention and language ability, all of which were somewhat deficient; but in most cases tests "containing primarily motor elements" gave lower scores than would be expected from the mental ability. Forty-eight patients were treated with phenobarbital for a year; in most cases 1½ gr. (0.1 gm.) was given twice a day, in some cases the same dosage three times a day. In 79 per cent of these cases, the attacks were entirely absent or were much reduced in frequency and severity under treatment. Psychological tests performed before and after one year of treatment showed no mental deterioration. In a control group of 42 epileptics not given phenobarbital, psychological tests repeated at the end of a year also showed no deterioration. Seven patients were tested before and after two years of phenobarbital treatment; the slight changes noted were favorable—"in the direction of normality." In 13 cases one year was used as a control without phenobarbital treatment, and phenobarbital was given for the second year. There was some improvement in the results of the tests after the second year. These findings indicate that phenobarbital may be given in doses of 1½ grains (0.1 gm.) two or or three times a day for at least two years without any mental deterioration resulting.

COMMENT

This presentation provides an answer to a question often propounded by patients: "Is the long continued use of phenobarbital harmful? Will it produce a permanently bad effect on my child's brain?" The same answer could be given in whatever age period the drug is administered. *H.R.M.*

Pick's Disease

S. M. BOUTON, JR. (*Journal of Nervous and Mental Disease*, 91: 9, Jan., 1940) notes that the characteristic cortical atrophy of Pick's disease represents the end result of a chronically progressive condition; but this does not serve as a criterion for the diagnosis of Pick's disease in cases in which death occurs at an early stage, or the clinical course is rapidly progressive. Four cases are reported as representing greatly varying duration and rapidity of development of Pick's disease. In the first case, the patient showed "frank symptoms" for nine years, and autopsy showed extreme gross atrophy of the brain, "heavy" gliosis in the cortex and much destruction of nerve cells, relatively numerous nerve cells remaining and ap-

parently normal In the second case, the duration of symptoms was seven years; autopsy showed gross atrophy of the brain, "moderately heavy" cortical glioses, and extensive nerve cell changes. In the third and fourth cases, of shorter duration—two and a half and two years respectively—autopsy showed moderate gross atrophy and very little gliosis in the third case, practically no gross atrophy and no gliosis in the fourth case, but advanced nerve cell changes in both cases and even loss of cells in the affected area in the fourth case. In all these cases the clinical symptoms were: initial disturbance of the waking-sleeping cycle; relatively few and varied neurological findings; mild and only initial delusions (none in one case); restlessness and emotional instability at first with subsequent apathy and "flattening of effect"; relatively intact memory and orientation; marked speech difficulties; absence of convulsions (except in one case in the late stage); terminal physical deterioration. The autopsy findings in the more acute cases indicate that encephalography would not be of value in the diagnosis of Pick's disease because the gross cerebral atrophy varies in degree according to the acuteness of the condition and evidently is not marked in the early stages. Since the histories of all patients show certain similarities, they can be "recognized in retrospect" as cases of presenile dementia if not actually as Pick's disease. The author considers that the principles and methods outlined by Goldstein and Katz in 1937 (*Arch. Neurol. & Psychiat.*, 38:473, Sept. 1937) should be used in diagnosis when suggestive symptoms develop in patients in late middle age.

Involvement of the Nervous System Associated with Endocarditis

J. KERNOHAN, H. W. WOLTMAN and A. R. BARNES (*Archives of Neurology and Psychiatry*, 42:789, Nov. 1939) report pathological studies of the central nervous system in 42 cases of endocarditis of various types. In 23 cases of rheumatic endocarditis, the clinical history showed "neuropsychiatric disturbances of one kind or another" in 21 cases; the most common neurological symptom was hemiplegia which occurred in 10 cases; chorea had occurred in 3 cases; there was a definite psychosis in 5 cases, but in one instance a definite relationship to the endocarditis could not be established. In rheumatic endocarditis in any stage of the disease vegetations may break off and be carried into the blood vessels of the brain; with emboli in the larger blood vessels infarcts result that can be seen with the naked eye, and resemble the infarcts of cerebral arteriosclerosis; such infarcts were found in 14 of the 23 cases. Microscopic lesions "suggestive of successive occlusive lesions or showers of emboli" which caused multiple foci of degeneration were found in 22 of the 23 cases; these foci varied in size; some were very small and difficult to recognize without the Nissl stain or some modification of it; several foci might fuse giving the cortex an irregular, mottled appearance. In these foci all nerve cells and many of the astrocytes had disappeared; the absence of nerve cells was the outstanding feature. In only 4 cases in the earlier stage of the disease was there any glial reaction. Nine of these cases were subacute bacterial endocarditis; in 7 of these cases the clinical history showed neuropsychiatric disorders — including hemiplegia, convulsions, chorea (one case) and behavior disorders (one case). In all the 9 cases, there were widespread glial reactions, based on occluded arterioles and capillaries. There were also smaller foci. Nerve cells at the edge of the foci showed degeneration, but close to and even in the zone of the glial reaction many nerve cells were normal; in the earlier foci, however, some areas showed absence of nerve cells, accompanied by edema. The astrocytes showed proliferation. There were 10 cases of acute infective bacterial (septic) endocarditis; in all of these cases neurologic or psychiatric symptoms had been present; 2 had shown typical symptoms of encephalitis and 2, of meningitis. In all but one of these cases, multiple abscesses were found in the central nervous

system; in the younger and smaller abscesses a small vessel occluded by an infective thrombus could be seen. In one case in which the meningococcus had been isolated from the blood, no abscesses were present in the central nervous system, but small glial foci and "minute acellular regions" in the superficial layer of the cortex.

These findings show that in endocarditis, pathological changes in the central nervous system are common, and show a distinctive type for each type of endocarditis. More careful neurologic and psychiatric surveys of patients with endocarditis are desirable and would probably show a high incidence of neurologic symptoms.

Treatment of Encephalitis with the Roentgen Ray

S. RUBENFELD and A. WOLF *(American Journal of Roentgenology,* 42: 561, Oct. 1939) note that since the influenza epidemic of 1918, encephalitis has assumed a role of great importance, not only because of the large number of acute cases of encephalitis that have occurred, but also because many of these acute cases became chronic, showing the characteristic symptoms of Parkinsonism. In some cases the chronic stage developed slowly and progressively from the acute stage; in others, the patient apparently recovered from the acute attack, but later developed the typical chronic form. In this form of encephalitis, there is an inflammatory reaction in the perivascular or intra-adventitial spaces with the formation of "lymphocytic cuffs" around the blood vessels; in the chronic stage, the inflammatory changes are less marked, but perivascular round cell infiltration persists in some areas. In 1934 Goldberg, Baker and Huff reported the treatment of the acute form of encephalitis with the Roentgen rays with good results. In the acute stage the lymphocytic infiltration which is so characteristic of this disease is radiosensitive, and good results might be expected from x-ray therapy. In a case of chronic encephalitis observed by one of the authors (A. W.) in which the patient attempted suicide with carbon monoxide, the most of the characteristic symptoms of Parkinsonism disappeared temporarily. This was explained as due to vascular hyperemia and dilatation in the brain induced by the gas. Accordingly in 9 cases of chronic encephalitis, small doses of Roentgen rays were given over the basal ganglia with the aim of "stimulating and maintaining for a time an active vascular dilatation sufficient to produce change in the symptomatology." In none of these cases was a definite objective improvement obtained, but one patient stated that he felt better for the day when a treatment had been given. In 2 cases of acute encephalitis in children, Roentgenray therapy was used after the acute symptoms of fever and a stupor subsided; in one of these children strabismus persisted, and in the other a behavior disorder developed. In the first case the strabismus disappeared and the patient has been entirely free from symptoms for fifteen months; in the second case, the child became normal in behavior and showed marked physical improvement. In both cases 200 kv. with 0.5 mm. copper filter was employed; the dosage in the first case was 75 r each treatment up to a total of 400 r. In these cases the subsidence of symptoms seemed to be "directly related to this form of therapy."

COMMENT

X-ray in the treatment of infectious inflammations of the central nervous system has been used for years in France. Only recently have American roentgenologists adopted this procedure. It is to be hoped that again the promiscuous use of roentgen therapy such as

existed thirty to forty years ago, will not make over-enthusiasts and break down the conservative application of therapeutic x-rays.

N.E.T.

The Penetration of Rays Through the Skin and Radiant Energy for the Treatment of Wounds

LEONARD HILL *(British Journal of Physical Medicine,* 2: 276, Dec. 1939) states that ultra-violet rays are largely absorbed in the epidermis, and their effect is "limited to the living cells therein and the capillary loops of the derma just beneath." When of sufficient intensity, the rays sterilize the skin surface. The effect of the ultra-violet rays on the distribution of blood, lymph and leukocytes and their sterilizing power make them of value in the treatment of wounds, provided the dosage is not too heavy and healthy granulations are not damaged. The short infra-red rays are also of value in the treatment of wounds; these rays penetrate more deeply than the ultra-violet rays; they bring blood into the part irradiated, warm and relax the tissues, lessen the "tension of nerve endings and so relieve pain." The short infra-red rays coming from luminous sources penetrate more deeply than the long infra-red rays from non-luminous sources; the latter warm the surface of the skin. The author has found that the rays from dark sources of heat—such as stoves —and dull red sources—such as electric fires—cause congestion of the mucous membrane of the air passages; rays from bright luminous sources "have the opposite effect"; this explains the greater comfort experienced by many people under irradiation from the latter type of source. Radiation treatment of wounds can be carried out by a mercury vapor lamp, supplemented by "a ring of incandescent lamps." Hill notes also that one of the best methods of applying heat to painful parts (not wounds) is by a wax bath at 130° F.; the melted wax solidifies at skin temperature and forms a covering on the part of the body immersed in the bath which protects the skin from over-heating, the vapor of the sweat underneath this covering acting as an insulator. This method is used chiefly in the treatment of chilblains and rheumatic pains.

COMMENT

Sir Leonard Hill has always been most conservative and scientific in his analysis of the effects of light. This article of his is worthy of study in its complete form.

The use of ultraviolet light in the treatment of wounds requires very cautious application because granulation tissue is about the only tissue that is adversely affected by ultraviolet light.

It is well understood in this country that infra-red from a luminous source is much better than from a non-luminous source. The tungsten filament in an ordinary bulb generates even more infra-red than does the nichrome wire in a non-luminous applicator. The use of photothermy is not to heat the skin but to project energy beneath the skin, where it is converted into heat.

Paraffin baths are very popular in England because the once used paraffin may be traded in to the oil companies for a fresh supply at very little cost and patients may be sure that the wax has not been used on another's foot or diseased hand. In this country paraffin stays the property of the buyer and frequently is used over and over again.

N.E.T.

A Modified Method for Short Wave Diathermy

M. BRUNNER and F. H. KRUSEN of the Mayo Clinic *(Archives of Physical Therapy,* 21: 16, Jan. 1940) note that the efficacy of the diathermy current depends on the course it takes through the body. Various forms of electrodes are employed and also the solenoid or so-called electric coil to concentrate and direct the short wave energy. As in certain cases it is advantageous to treat several portions of the body, using different amounts of energy, the authors have designed an apparatus for using short wave current in this way. In this device one output jack is connected with a large electrode, the other with the "distributor" by which the current is divided into two parts, each of which can be "tuned" separately to induce varying amounts of short wave energy; two electrodes of equal or different size are connected with the distributor. With this device the distance between the two areas at

which the two electrodes from the distributor are applied is subdivided, and the larger electrode connected directly with the apparatus is placed between the other two. In this way short wave energy in varying amounts can be distributed to different areas. Many of the patients treated by this method have stated that they felt "a uniform sensation of warmth and comfort throughout the body." This method has been found of value in treating arthritis, where it is desirable to treat more than one joint in different parts of the body simultaneously; it has also been used in cases where it is desired to treat both knees or both legs at the same time. Satisfactory results in relief of pain and joint debility have been obtained in a number of cases. The "distributor" described has so far been used only with currents of 18 meter wave length, but experiments are being conducted with a distributor for a wave length of 12 meters.

COMMENT

The ingenious distributor described in this article would perhaps save a little time in the routine treatment of clinic patients. Inasmuch as it is seldom advisable to give more than ten minutes of short wave diathermy to one location, if it is necessary to treat a second one it is simpler to apply the current for another ten minutes rather than complicate the application by an added piece of apparatus which requires delicate adjustment of its resonance. Short wave machines are sufficiently high priced to make an added device to the machine a luxury, as well as another means of complicating the application of this potent energy.

N.E.T.

Rational Ultraviolet Ray Therapy and Skin Sensitivity

J. SAIDMAN *(Archives of Physical Therapy,* 20: 673, Nov. 1939) describes his method for measuring skin sensitivity to the ultra-violet rays, which is used to determine the dosage in ultra-violet treatments for various conditions. The method consists in irradiating a definite area, usually on the back, "with progressive intensities of ultra-violet rays controlled by an automatic device", and determining the dose producing minimum erythema reactions, of the first, second, third and fourth degrees. In clinical practice these degrees of reaction are as follows: First degree minimum erythema dose (M.E.D. 1) is that necessary to obtain a superficial and ephemeral reaction; second degree minimum erythema dose (M.E.D. 2) is that necessary to obtain a deeper reaction with pigmentation; third degree minimum dose (M.E.D. 3) is that required to produce a destructive reaction with desquamation; fourth degree minimum dose (M.E.D. 4) is that required to produce phlyctena. The author has gradually modified his device for measuring skin sensitivity. The appliance at present used is a special frame, in which the ultra-violet rays are reduced in definite proportions; the numerals for radiation intensity are numbered 1 to 9, representing a transmission of 10 to 90 per cent of the radiation from the source employed; the figure 0 transmits 96 per cent of the energy of long and middle ultra-violet rays and 80 per cent of short ultraviolet rays. The frame is fixed on a metallic plate and placed on the skin of the back and exposed to the radiation of the lamp to be employed or of the sun. The time of exposure must be sufficient to produce a second or third degree erythema on a normally sensitive skin. The patient is examined the following day, and the figures are visible on the skin as red erythemal marks; if the skin is normally sensitive the figures 4 to 0 will usually be visible; if hypersensitive all the figures will be visible. The lowest numeral perceptible on the skin indicates the minimum erythema dose; if it be 4, 1, or 8, the M.E.D. 1 is 40, 10 or 80 Finsen units; or if the time of test exposure is 10 minutes, the time of exposure for the M.E.D. 1 is 4, 1 or 8 minutes with the source employed. As a rule the second degree minimum erythema dose is twice the first degree M.E.D., and the third degree M.E.D. is three times the first degree, but this varies somewhat depending upon the patient's skin and on the lamps. Sources emitting wave lengths around 2536 Å give only slightly progressive reactions and no deep effects; sources emitting wave lengths of 3000 to 3130 Å give deeper reactions. Certain general

treatments for debility, anemia, rickets, etc., do not require erythema, and the maximum dose does not exceed M.E.D. 1; regional treatments for tuberculous glands, peritonitis and nephritis, rheumatic conditions, etc., require second to third degree erythemas; and local treatments for certain skin lesions a fourth degree erythema. This method of measuring skin sensitivity is also valuable as a guide for treatment with the sun's rays as well as with artificial sources of ultra-violet rays; and has been so employed by the author at Aix-les-Bains.

COMMENT

A knowledge of the exact amount and the expected effect of doses of ultraviolet light has always been necessary for the correct use of this energy. Many devices, such as the one mentioned by this author, have been in use in this country. It is just as practical, however, to use a cardboard cut with a series of openings and the flaps closed at different intervals to observe the erythema dose of the individual burner. For years it has been advocated by the users of ultraviolet light that the erythema dose of each burner be marked on the hood and that when ultraviolet energy is prescribed it should be in so many times the erythema dose. To estimate this dose a photometer is exact and convenient.

N.E.T.

INDUSTRIAL MEDICINE AND SOCIAL HYGIENE

The Differentiation and Identification of Bacillary Incitants of Dysentery

M. B. COLEMAN (*American Journal of Public Health,* 30: 39, Jan. 1940) notes that there is a relatively high incidence of outbreaks of enteritis of varying degrees of severity, especially in institutions and camps, in some of which a recognized type of dysentery bacillus can be identified as the causative organism; but in other instances the etiology cannot be definitely established by the usual laboratory methods. In the New York State Department of Health laboratories, the desoxycholate citrate agar medium recommended by Hardy has been found of marked value in isolating dysentery bacilli. But as the growth of a few strains of the Flexner group and a larger number of strains of the Shiga group is inhibited on this medium, at least one additional medium should be used for plating specimens from outbreaks of enteritis. At the Albany (State) laboratory eosin-methylene-blue agar and a modification of Endo's medium have been found satisfactory for this purpose. Definite criteria must be established for the identification of recognized types of dysentery bacilli, as these show variations in their reactions on artificial media as well as in their agglutinative properties. In the New York State laboratories a type of dysentery bacillus differing from other recognized types, and designated as *B. dysenteriae* Schmitz, has been identified as the causative organism of a few extensive outbreaks of a relatively mild type of dysentery in the State; this strain ferments maltose but not mannitol, produces indol, and is antigenically distinct from other types. Isolated outbreaks of enteritis occur, also, in which the causative organism cannot be isolated by the methods used for the isolation of dysentery bacilli; other methods must be used for the identification of such species. Two such species have been isolated in the New York State laboratories, neither of which are regarded as belonging to the dysentery group but both of which caused small outbreaks of enteritis. Both of these strains grow on Russell's double-sugar medium. One gives the reactions characteristic of the paratyphoid-enteritides group; the other is considered to be closely related to either *B. lignieri* or *Pasteurella pseudotuberculosis*. In the identification of a certain strain as the causative organism of an outbreak of enteritis, agglutination

tests with patients' sera may sometimes be of value, but with the methods at present used, agglutinative properties are not always demonstrable. The public health laboratory is constantly faced with the problem of "a systematic study of the various types of bacteria found in feces from undiagnosed cases"; and for this purpose "methods of isolation and means of identification" of various strains, old and new, must be elaborated.

COMMENT

From the epidemiological point of view, the importance of accurate differentiation of intestinal pathogenic bacteria, including various types of dysentery bacilli, is well appreciated. The work conducted in the laboratories of the New York State Health Department along these lines has been notable. More effective public health control of these infections will become possible with the increasing knowledge now becoming available.

M.L.G.

The Intracutaneous Method of Typhoid Vaccination

L. TUFT (*American Journal of Medical Sciences,* 199: 84, Jan. 1940) notes that in 1932, in association with Yagle and Rogers, he reported a study of typhoid vaccination by various routes; in this study, the intracutaneous method was found to be most effective for the production of immunity as indicated by the agglutination and complement fixation tests. Further studies have since been made of the effectiveness of the subcutaneous and the intracutaneous injection of typhoid vaccine in producing immunity against typhoid. Both the agglutination test and the mouse protective test were employed. One group of individuals not previously immunized against typhoid were given intracutaneous injections of a typhoid vaccine, 0.1 cc., 0.15 cc. and 0.2 cc. at weekly intervals; and another group subcutaneous injections of the same vaccine, 0.5 c.c., 1 c.c. and 1 c.c. at weekly intervals. The agglutination tests were made on the sera from each group three weeks after the last injection. In both groups the H agglutinin response was good, the intracutaneous group showing a somewhat higher percentage with a titer of 2560 than the subcutaneous group. In both groups the 0 agglutinin response was much less, as has been found to be the case with any method of typhoid vaccination by other investigators; the 0 agglutinating titer was somewhat less in the subcutaneous group than in the intracutaneous group. In the mouse protection test pooled sera from each group were employed. The sera from the group treated intracutaneously had protective power against over 100 minimum lethal doses of typhoid bacilli and slightly less than 500 m.l.d's, while the sera from the subcutaneously treated group had protective power against less than 100 m.l.d.'s. In the intracutaneous group the protective power of the sera was definitely greater than that of typhoid convalescent sera. The reactions in the intracutaneous group were slight; the local reactions were mild, causing little or no discomfort; slight nausea, mild vertigo, slight general malaise occurred in one case each, but no other systemic reaction after a total of 168 doses in this group. In the subcutaneous group the local reactions were more marked; headache, fever and malaise lasting forty-eight hours occurred in several cases. These findings confirmed the author's previous conclusions in regard to the efficacy of the intracutaneous typhoid vaccination from an immunological viewpoint. This method has the added advantage of reducing "annoying reactions" to a minimum. On the basis of these results it is claimed that the intracutaneous injection of 0.1 c.c., 0.15 c.c. and 0.2 c.c. of ordinary typhoid vaccine "is the most satisfactory of any of the methods for typhoid immunization and should be more widely used."

COMMENT

Tuft and his co-workers have adequately demonstrated the value of active immunization against typhoid fever through the use of intracutaneous injections of typhoid vaccine. The advantages of this method over the accepted subcutaneous method have been pointed out. However, the comparative duration of immunity as induced by the two methods is yet to be determined.

M.L.G.

Possibility of Control of Lead Exposure by Examining Less than 24 Hour Urine Samples

E. C. BARNES *(Journal of Industrial Hygiene,* 21: 464, Nov. 1939) notes that at the Westinghouse Company's Pittsburgh plant, much difficulty has been experienced in collecting 24 hour samples for the determination of lead excretion, as an index of exposure to lead. In a group of workers exposed to lead (spray painters) two or three hour samples of urine were collected at the Medical Department of the plant during working hours, and analyzed for lead excretion per hour and also for total concentration of lead per liter. It was found that as a rule the values for lead excreted per hour were more constant than the concentration per liter. It was found that these values for per hour excretion were within a sufficiently narrow range to be used as a measurement of total lead excreted per day, and show no more marked variation than the values for 24 hour specimens from the same person. These two or three hour specimens, which can be collected during the working day, can be used as a measure of lead exposure in the same way as 24 hour specimens, and this method is now employed at the Westinghouse plant. The author notes that "extreme care must be taken to avoid contamination of these small specimens."

COMMENT

The method of determining lead excretion among workers exposed to this metal, as employed at the Westinghouse Pittsburgh plant, appears to be practical but is probably so only where the collection and examination of such specimens can be done under carefully controlled conditions. However, it is well to know that the values for lead excreted per hour are more constant than the concentration per liter in the hands of the medical department of this plant.

M.L.G.

Occupational Dermatoses in the Aircraft Industry

C. RAY LOUNSBERRY *(California and Western Medicine,* 51: 309, Nov. 1939) reports a study of the occupational dermatoses observed in a large aircraft manufacturing plant in San Diego. The most frequent cause of skin lesions in this plant was contact with duraluminum (the new metal used in aeroplane construction) when lubricated with fish oil. On investigation of these cases, it was found that "dural" shavings alone would not cause skin irritation or give a patch reaction, but when dural shavings were mixed with commercial fish oil a positive patch reaction was obtained in susceptible individuals. Contact with the dural metal lubricated with fish oil, in drilling, sawing and riveting the material, will produce a severe dermatitis in certain cases. Another factor in this fish oil dermatitis is that oils used commercially are "laden with bacteria", so that if the skin is abraded a pyogenic dermatitis may develop. Other cases of dermatitis have been observed in the paint shop due to different forms of thinner, "dope", lacquers, varnishes, etc., which produce positive patch reactions in certain individuals. In the machine shop cutting-oils were an "occupational hazard", associated with the dural-fish oil hazard. Many cases of furunculosis occur in men working with drilling machines. In sand blasting, buffing and polishing processes, skin lesions may be caused by contact with acids, iron oxide, emery and polishing agents. Patch tests have proved of much value in determining the true cause ot the dermatitis; according to these tests the dermatitis due to dural-fish oil contact is the most characteristic skin lesion in the aircraft industry. In the cases of allergic dermatoses, the author found definite evidence of "an imbalance of central and sympathetic nervous system." Another factor in aiding or retarding chemical irritation was the pH of the perspiration; all symptoms "were exaggerated on highly acid skins."

COMMENT

This contribution is of considerable importance in the field of industrial hygiene. With the growth and development of the aircraft manufacturing industry and the employment of large numbers of individuals, increasing knowledge of occupational hazards, as regards dermatoses, is of considerable importance. In order to reduce the incidence of dermatoses, two lines of attack may be employed—(1) the improvement and elimination of chemicals and agents which are likely

to produce dermatoses and (2) careful selection of employees, with a view to employing the non-susceptibles.

M.L.G.

Interpretation of Serodiagnostic Procedures in Syphilis

A. L. MacNABB and G. MATTHEWS *(Canadian Public Health Journal,* 30:571, Dec. 1939) note that in public health laboratories whatever method is selected as the official serological test for the diagnosis of syphilis, a control test should always be conducted by another standardized method. "No one test, however carefully standardized and performed, will reveal the presence of syphilis in every case." In the central laboratories of the Ontario Department of Health, up to July 1, 1937, all blood specimens submitted for the serodiagnosis of syphilis were subjected to both the Standard Kahn and the Kolmer Wassermann tests. Since that date the Hinton flocculation test has been used as the control of the Standard Kahn, which is the "official test." Only if there is disagreement between these two tests is the Kolman Wassermann test used. This change from the Wassermann to the Hinton test as the routine control test was made because the number of specimens for the diagnosis of syphilis submitted to the laboratory had markedly increased, and the "satisfactory performance" of a Wassermann test as a routine control involved a greatly increased expenditure. The Standard Kahn and Hinton tests agreed in 95.78 per cent of cases, making a control Wassermann test necessary in only a small percentage of cases. In cases where the Kahn and the Hinton test do not agree, first importance is given to the results of the Standard Kahn and the Kolmer Wassermann tests, especially in treated cases. Recent studies with the Presumptive Kahn test have shown it to be more sensitive than the Standard Kahn; the Standard Kahn never gave a positive reaction where the Presumptive Kahn was negative; the latter may therefore be a valuable aid when used as an early diagnostic or "exclusion" test. It should always be controlled either by the Standard Kahn or a reliable complement fixation test such as the Kolmer Wassermann.

COMMENT

The observation of the Canadian Workers as regards the acceptance of one test in the detection of the presence of syphilis is also the consensus of American syphilologists. Recognized laboratories, both official and private, as a general rule, employ two or more serological tests before a commitment is made as to the positivity or negativity of the specimen.

M.L.G.

Local Use of Vitamin A Preparations in Ophthalmic Practice

S. de GRÓSZ of Budapest, Hungary *(Archives of Ophthalmology,* 22: 727, Nov. 1939) reports that for some years he has employed a vitamin A preparation called vulnovitan in the local treatment of eye diseases. This vitamin A preparation is used either as an oil (with a liquid petrolatum base) or as an ointment (with a petrolatum base). It has been used with good results in the treatment of injuries and burns of the cornea and conjunctiva. It has also been used for various types of corneal inflammation in which the epithelium showed sluggish or no regeneration; the most important indication for the local use of vitamin A in the eye, the author believes, is the herpetic group of corneal diseases (dendritic ulcer, recurrent erosion and keratitis bullosa). The local use of vitamin A is also of value in neuroparalytic keratitis, gonorrheal ulcer of the cornea and Mooren's ulcer. The therapeutic value

of vitamin A used locally is to be attributed to the fact that it aids and accelerates epithelization; "it is truly a protective agent for the epithelium." The vitamin A preparation used by the author has a "powerful analgesic effect"; however, this does not necessarily render the use of ethylmorphine hydrochloride superfluous when using vitamin A applications.

Comment

Cases of local eye disease treated with vitamins have been reported with very striking results. Most have been chronic ulcerations without history or reliable details to suggest the cause. From this group of chronic ailments, all heritable dystrophies must be eliminated and this has not been possible until recently because the diagnostic details of these rare cases have only recently been recognized. Chronic lesions after herpes assume many forms and various bilateral lesions of the dystrophic type originating in the senile arc provide case types which should be helped by this therapy, but the customary protection of a cornea with lowered vitality cannot be omitted.

R.I.L.

Interstitial Keratitis Caused by Specific Sensitivity to Ingested Foods

A. M. DEAN, F. W. DEAN and G. R. McCUTCHAN (*Archives of Ophthalmology*, 23: 48, Jan. 1940) report 6 cases of typical interstitial keratitis in which the condition was found to be caused by the ingestion of certain foods and symptoms relieved by omitting these foods from the diet. In these cases the usual causes of interstitial keratitis, especially syphilis and tuberculosis, could be definitely excluded. A few cases of interstitial keratitis have been reported in literature in which no definite cause could be found; in some of these cases a specific food sensitivity might have been the etiologic factor. In the authors' cases the determination of the sensitizing foods was made by one or more of the three methods usually employed in the study of allergy—history, elimination diets and cutaneous tests; all three methods were not used in every case. In these cases the disease commenced with slight irritation, lacrimation and redness; these symptoms became more severe and vision became hazy as the central portion of the cornea was involved; as the disease advanced, the vision became progressively more clouded and the pain severe. In the early stage there was moderate ciliary injection; the slit lamp showed faint gray or yellowish gray opacities fairly well localized in one quadrant; small vacuoles appeared early; loops of scleral vessels developed deep in the corneal stroma toward the lesions; conjunctival loops also extended into the more superficial layers of the cornea, but always underneath the epithelium; these vessels were less numerous than in syphilitic keratitis and did not produce the "salmon patch." As the disease progressed, the opacities increased in number and extended over all parts of the cornea; scar tissue invaded the stroma, leaving "a fairly clear margin" near the limbus; dense opacities appeared late; corneal ulceration did not occur. When the sensitizing food was removed from the diet, the ciliary injection and pain were relieved in forty-eight hours; opacities that were not escharotic gradually diminished, but after scar tissue has developed, arrest of the process is all that can be expected. If the sensitizing food was taken at any time after the process was arrested and the eye was white and quiet, there was an exacerbation of all symptoms within twenty-four hours. In some of the cases there was more than one article of food that would produce such an exacerbation.

Comment

The commentator believes the diagnosis of interstitial keratitis as described in this article is objectionable. Interstitial keratitis was the name selected for a definite entity of syphilitic origin at a time when no other cause for a typical picture of the disease was known. It was soon discovered that tuberculosis was also a legitimate but less frequent cause of the same clinical picture.

Involvement of the deeper layers of the cornea by extension from the surface as in any lengthy corneal condition should be described in a way that will prevent confusion. The group of cases described in this excellent article come under the head of "allergic eyes" and we await further information before giving a truly descriptive name. I venture to suggest that the sensitivity to certain articles of food is but a part of the picture awaiting filling in of details to the end that an intelligent treatment may be evolved. The help received from

case reports of this kind should not be underestimated. It is good to be able to say that this type of case is occupying its share of the attention of the group of men most interested, the oculists and the allergists.

R.I.L.

Retinal Detachment Occurring in Primary Compensated Glaucoma

H. S. GRADLE and D. SNYDACKER *(American Journal of Ophthalmology,* 23: 52, Jan. 1940) report 3 cases of glaucoma in which detachment of the retina occurred. Two of these were primary and one secondary glaucoma. In all the increased intra-ocular tension was reduced and controlled by a combination of pilocarpine and eserine. The detachment of the retina occurred in each instance after the intra-ocular tension had been lowered. In the period of five years during which these 3 cases were observed, 447 glaucoma cases have been treated, and in 26 of these a combination of pilocarpine and eserine has been used or is being used without deleterious effect; the occurrence of retinal detachment cannot be attributed to the use of these miotics alone. A review of the literature shows that the occurrence of retinal detachment in glaucoma is a very rare complication either when the intra-ocular tension is high, or when it has been reduced by miotics or by surgery. When the tension is elevated, and is "spread evenly throughout the vitreous," this tends to "plaster the retina evenly against the underlying tissues" and thus would tend to prevent retinal detachment. But why the occurrence of retinal detachment should be so unusual in glaucoma after the reduction of the intra-ocular pressure cannot be explained; if the reason for this could be demonstrated, "it might be a step forward in determining the pathogenesis of idiopathic retinal detachment."

COMMENT

The common cause of tension in detachment of the retina is intra-ocular tumor, which has been eliminated in this series of cases. This type of complication in the glaucoma described is indeed unusual but that more puzzles were not found in 447 cases is surprising. The presence of fibrin bits on the posterior corneal surface and the slit-lamp pictures known as cornea fairinata and cornea guttata in glaucoma and also in detachment of the retina, even in comparatively young persons, is a strong hint that the basic intra-ocular disease behind both conditions has more than one aspect.

R.I.L.

Retinal Detachment Cured by an Eyeball Shortening Operation

D. K. PISCHEL and MIRIAM MILLER *(Archives of Ophthalmology,* 22: 974, Dec. 1939) report a case of retinal detachment in which the eyeball-shortening operation, described by Lindner in 1933 in the *Zeitschrift für Augenheilkunde,* was employed. The operation consists essentially in excising a long, narrow, crescent-shaped piece of sclera, concentric with the limbus, and suturing the cut edges of the sclera together. The length of the excised piece may be "from just under half to just over half the circumference of the globe." The technique is briefly described. This operation is most suitable when the detached retina is "held away from its normal bed by fine vitreous strands or by agglutination of retinal folds." Lindner, in his original article, reported 4 cases in which the operation was used, with cure in one case and improvement in 3 cases; other cases have been reported from Lindner's clinic, but the authors find no case in which this operation has been used reported in American literature. They report a case of detachment of the retina in a woman fifty-four years of age; a multiple diathermy puncture operation (Schiff) was first done, but the retinal detachment recurred in a month. As a second diathermy puncture operation failed to secure reattachment of the retina, the Lindner operation was done; a scleral strip 2.5 mm. wide was taken from the lower half of the globe from one lateral rectus muscle to the other, 11 mm. from the limbus. This resulted in complete reattachment of the retina, with great improvement in vision and normal visual field.

COMMENT

This is an operation of magnitude and like matrimony should not be entered into except advisedly and in a humble spirit.

Retinal detachment is a very serious mat-

ter and the immediate causal factors are unknown. Before the days of Gonin, the percentage of cures was zero, and although much higher rates of cure were reported formerly than those we have today, we are devoutly thankful for the results of the diathermy operation, which is like the Elliot trephine, entirely palliative in its design. With such excellent results before us, any technique that promises results in hopeless cases should have its turn.

R.I.L.

Sulfanilamide in Trachoma

R. JEBEJIAN *(Annales d'oculistique,* 176: 671, Sept. 1939) reports the use of the French product rubiazol (a sulfonamide compound) in the treatment of 8 cases of trachoma. The drug was given by mouth for five to fifteen days in a dosage of 2 to 3 gm. for adults and 1.50 gm. for children. All other treatment was suspended during the time rubiazol was given. In these cases the drug relieved the subjective symptoms, irritation, lachrymation, photophobia and blepharospasm very promptly; there was some regression of pannus and keratitis; and diminution of the conjunctivitis; but the hypertrophic lesions and granulations showed no change. The effect of the treatment reached its maximum within a few days; after that no further improvement was noted. In some cases local treatment was more effective after the administration of the sulfonamide than before. The author, therefore, considers sulfonamide to be of value as an adjuvant in the treatment of trachoma, especially in cases that are resistant to other methods; it should be given for only a few days.

L. A. JULIANELLE, J. F. LANE and W. P. WHITTED *(American Journal of Ophthalmology,* 22: 1244, Nov. 1939) report the treatment of 113 cases of trachoma (mostly in North American Indians) with sulfanilamide given by mouth. The usual dosage was that recommended by Loe in 1938—1/3 grain per pound of body weight for the first ten days in divided doses, with a reduction to 1/4 grain for the following fourteen days. An equivalent amount of sodium bicarbonate was given in tablet form. This dosage was modified in certain cases, especially if toxic symptoms developed. In cases of uncomplicated trachoma, improvement as measured by reduction in the number of follicles, and flattening and blanching of follicles was common, but complete recovery was rare; in cases complicated by concurrent conjunctivitis, the secondary infection was rapidly eliminated, and the trachomatous process frequently improved but rarely completely arrested. The best results were obtained in 13 cases of "flare-up" trachoma—i.e., a sudden severe return of symptoms in a case clinically quiescent; all of these patients were promptly relieved, and the lesions became arrested. In the entire series of cases, trachoma was rendered asymptomatic by treatment with sulfanilamide in approximately 20 per cent; there was definite improvement in 40 per cent, and no improvement in 40 per cent. A "variety" of toxic symptoms with the use of the drug was observed, but, by regulation of the dosage and careful observation, serious reactions were avoided.

Comment

How unfortunate that we did not know of this drug in the days when trachoma was common. It is surely a great help in acute stages of the disease and it would seem that the local use of the drug offers much. It is not at all improbable that a safer dosage will be found.

R.I.L.

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X-RAY IN THROMBOPENIA

Roentgen treatment to the spleen is probably the most satisfactory specific therapeutic agent in primary or uncomplicated thrombopenia with hemorrhage.

—Mississippi Valley M. J., Jan. '39.

MEDICAL BOOK NEWS

• *All books for review and communications concerning Book News should be addressed to the Editor of this department, 1313 Bedford Avenue, Brooklyn, N. Y.*

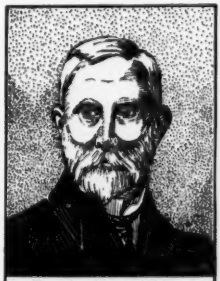
Edited by **Alfred E. Shipley, M.D., Dr. P.H.**

Nervous Disturbances for the Layman

THE TROUBLED MIND. A STUDY OF NERVOUS AND MENTAL ILLNESSES. By C. S. Bluemel, M.D. Baltimore, The Williams & Wilkins Company, [c. 1938]. 520 pages. 8 vo Cloth, $3.50.

IT is difficult to describe this book to physicians because of its superficiality. It is a frank attempt to talk down to a lay public on the subject of nervous and mental ailments, but it so obviously climbs down that it adds nothing to understanding which a newspaperman might not offer. Over 300 pages are devoted to the minutiae of hysterical reaction types and about 100 to gross mental diseases. The treatment throughout is descriptive in the same naive fashion that patients describe their own ailments. For example, part three undertakes to go into the nature and causes of psychoneurosis. To this end, eight chapters are devoted to broken engagements, divorce, bereavement, illness, etc. To demonstrate that a broken engagement is a cause of neurosis, the author states: (page 181) "The reaction is naturally temporary in the case of a stable individual; but the neurotic . . . person may develop a protracted nervous illness. . . ." This kind of redundant descriptiveness leaves the professional man with a feeling of obscurity at the end of each chapter. The lay person would find a wealth of hypochondriacal detail in the book on which to feed his neurosis, but the value of a doctor's book for lay persons should lie in some additional insight no layman could give.

SAM PARKER.



Sir Thomas Lauder Brunton
1844-1916

Classical Quotations

• The motor action of the arteries has received less attention; but it is, I think, very important, and is, I believe, the cause of the emptiness of the arteries after death, which so long prevented Harvey's discovery from being made. When working with Professor Ludwig in 1869, he directed my attention to the contractile power of the arteries apart from any nerve connection, and while watching their movements, I have sometimes seen a regular peristaltic action take place, by which the blood was driven forward in the arterioles, just as fecal matter would be driven in the intestines.

Sir Thomas Lauder Brunton.
Therapeutics of the Circulation, 1908, p. 5.

Campbell's New Orthopedic Surgery

OPERATIVE ORTHOPEDICS. By Willis C. Campbell, M.D. St. Louis, The C. V. Mosby Company, [c. 1939]. 1154 pages, illustrated. 4to. Cloth, $12.50.

THE author of this volume has devoted his life to the specialty, and has been a leader in the development of operative surgery of the bones and joints. He is perhaps best known for his contributions on arthroplasties, but there is no field of bone or joint surgery of which he has not a very comprehensive knowledge, reinforced by a wealth of clinical material.

This volume of over 1100 pages is the most complete treatise on operative orthopedic surgery in the English language. The

procedures are carefully described and beautifully illustrated; the subject matter is inclusive of every lesion of the locomotive apparatus. It is in no sense a textbook, but a mature treatise, with a most authoritative presentation designed to appeal to the orthopedic surgeon, and an invaluable aid to any physician doing industrial surgery.

DONALD E. MCKENNA.

Disorders of Peripheral Circulation

CIRCULATORY DISEASES OF THE EXTREMITIES. By John Homans, M.D. New York, The Macmillan Company, [c. 1939]. 330 pages, illustrated. 8vo. Cloth, $4.50.

THIS book is a timely presentation of the many and puzzling disorders of the peripheral circulation by one eminently qualified in experience and training. Various methods of testing the peripheral circulation, including the use of heat and cold, chemicals, and special apparatus are detailed. The role of the sympathetic nervous system in vasospasm and vasodilatation is fully presented and discussed. Great stress is laid on the earliest signs and early diagnosis of impending arterial disease with a view to prophylactic treatment in deferring the more serious complications, especially gangrene. Many practical measures for the alleviation of pain and discomfort are suggested.

One of the most timely chapters is that dealing with varicose veins and their treatment by injections with sclerosing solutions. One gathers that the simple expedient of injection has by no means supplanted in all cases the desirability of division of the veins at conventional points. Other subjects include thrombophlebitis and pulmonary embolism, elephantiasis, spasm of the arteries, Buerger's and Raynaud's diseases, and the interpretation of observations upon the circulatory disorders of the limbs. A number of valuable sketches illustrate important points and considerations. It is the most complete and comprehensive text on the subject matter that the reviewer has seen.

ARTHUR GOETSCH.

A New Edition of Jordan's Bacteriology

A TEXTBOOK OF GENERAL BACTERIOLOGY. By Edwin O. Jordan, Ph.D. Revised by William Borrows, Ph.D. Twelfth edition. Philadelphia, W. B. Saunders Company, [c. 1938]. 808 pages, illustrated. 8vo. Cloth, $6.00.

A POPULAR text since 1908, revision and rearrangement required by the changes during the three years since its previous edition has been accomplished without expansion of the volume. An excellent text for medical students, its subject has been ably directed for use in any science requiring technical knowledge of bacteriology. The survey of pathogenic organisms is well arranged, full, and has been divided into groupings by natural relationships. Application of the text to sanitation and immunology is exceptional, and is particularly notable as an introduction to industrial, dairy, and agricultural bacteriology. Additionally interesting to the medical reader are the sections concerning plant diseases of bacterial etiology. The reviewer notes the improved version of lymphopathia venerum, but misses mention of granuloma inguinale. The historical high lights and excellent selection of references furnishes with the text a complete and well-rounded bacteriological experience.

IRVING M. DERBY.

Cardiologic X-Ray

THE ELECTROCARDIOGRAM AND X-RAY CONFIGURATION OF THE HEART. By Arthur M. Master, M.D. Philadelphia, Lea & Febiger, [c. 1939]. 222 pages, illustrated. 4to. Cloth, $6.50.

THIS book deals with a feature of electrocardiography which has received little attention in books devoted

to the subject. In the early development of electrocardiography its importance was not fully realized, and it has been only gradually appreciated by those interested in cardiac disease. It is a phase of the subject which is still far from understood by those of limited experience in the field. Consequently, grave errors in diagnosis are made. That changes in position of the heart in normal individuals can induce changes in the electrocardiogram is beyond question. Even in disease alterations are produced which are due solely to enlargement of individual chambers, and do not necessarily indicate pathological changes in the cardiac muscle. All these facts are beautifully shown in the present volume, and the author is to be congratulated on the clear manner in which he has presented them. Both the electrocardiogram and teleoroentgenograms are excellently reproduced, and fully illustrate the points which it is desired to impress. The book should unquestionably be in the possession of all who are interested in heart disease.

J. HAMILTON CRAWFORD.

Mathews Biochemistry Revised

PHYSIOLOGICAL CHEMISTRY. A Text-Book for Students. By Albert P. Mathews, Ph.D. Sixth edition. Baltimore, William & Wilkins Company, [c. 1939]. 1488 pages, illustrated. 8vo. Cloth, $8.00.

THE name of this author is known to everyone interested in biochemical sciences. For years, due to the clarity of his style and the subtlety of his thought, everything that he wrote has occupied a place of first importance in the field of biochemistry. However, one does not exaggerate when he states that the present book surpasses any of his previous writings. Although this is the sixth edition of the text, it differs in many respects from previous editions. The experimental data has been eliminated, yet the present edition has nearly five hundred more pages than the fifth edition. This implies that all of the chapters on the theoretical phases of the subject have been rewritten and enlarged. Some new chapters have been added. With the exception of the elimination of experimental data, the author has adhered to the fundamental principles and plans of the earlier editions, but he has so thoroughly recast and amended so many portions of the text that one feels that he is reading a new book on the subject. All outstanding researches of recent date have been intimately blended into the subject matter of the previous editions. This is especially true in connection with the advances in all phases of metabolism. Throughout the entire book the metabolic significance of each substance is discussed. Everyone who reads this work will find his knowledge of the subject greatly enlarged.

MATTHEW STEEL.

Medical Problems of Youth

THE CHALLENGE OF ADOLESCENCE. By Ira S. Wile, M.D. New York, Greenberg Publisher, [c. 1939]. 484 pages. 8vo. Cloth, $3.50.

THIS work shows evidence of deep thought on the part of the author, with respect to the subject. After an introductory discourse on the nature and meaning of adolescence, subsequent chapters discuss physical maturation, the effect of familial influences on the adolescent, and pathology of adolescence. The book presents much factual data. It utilizes varying schools of thought with respect to the influences of these on the developing of the adolescent personality. In addition to being of general interest to the reader, both lay and medical, it has particular value for the physician especially interested in the subject.

STANLEY S. LAMM.

Podiatry

FOOT ORTHOPAEDICS. By Otto N. Schuster, Pod.G. Second edition edited by Maurice J. Lewi, M.D. and Herman Scheimberg, M.Cp. Albany, J. B. Lyon Company, [c. 1939]. 525 pages, illustrated. 8vo. Cloth.

THIS book is a standard text used for teaching chiropodists. It is rather comprehensive, and deals with anatomy and physiology of the normal human foot as well as disorders associated with it.

The book is now in its second edition, and has been brought up to date.

CARMELO C. VITALE.

Stammering

CORRECTING NERVOUS SPEECH DISORDERS. By Mabel F. Gifford. New York, Prentice-Hall, Inc., [c. 1939]. 190 pages illustrated. 8vo. Cloth, $2.85.

THIS book is intended primarily for teachers who have to deal with speech problems in school.

It discusses the treatment for the following types of speech disorders:—stammering, stuttering, nervous hesitation and cluttering.

These are rather academic subdivisions of the basic problem of stuttering.

In the preface the author states that "stammering has no organic or functional origin, but is a problem of emotional maladjustment involving the total personality." If emotional maladjustment and personality problems are not functional in nature, what are they? And what does the author mean by the above statement?

Principles of treatment, as presented by Miss Gifford, are the accepted present-day methods of relaxation, fluent rhythmical controlled speaking, and an appreciation of the importance of mental hygiene.

The author is somewhat dogmatic in her assertions—"It can be done. It is being done."

Anyone dealing with stutterers realizes that the problem is not as simple as all that. The book, in spite of its simplification of the subject, provides the teacher with a good insight into the problem of stuttering.

I. W. KARLIN.

Clinical Physiology

THE PHYSIOLOGICAL BASIS OF MEDICAL PRACTICE. A University of Toronto Text in Applied Physiology. By Charles H. Best, M.D. and Norman B. Taylor, M.D. Second edition. Baltimore, Williams & Wilkins Co., [c. 1939]. 1872 pages, illustrated. 8vo. Cloth, $10.00.

THIS second edition appears about two and one half years after the first one, which was received with much praise. The authors aim to bring physiological principles into closer relation with clinical problems, and have accomplished their purpose unusually well.

The general plan of the book is unchanged, furnishing a wealth of information. In addition to its value to the older practitioner for reference, it is a splendid volume for daily study, although more difficult to digest than a medical journal. The scope of the work is such that a detailed review is impossible. Information on many subjects, some not easy to find in detail in other books, as for example, the carotid sinus mechanism, is at hand. Being brought so thoroughly up to date, new measures of interest, such as the use of heparin as an anticoagulant, or of vitamin K to prevent bleeding in jaundiced patients, are described.

W. E. MCCOLLOM.

Laryngeal Carcinoma

CANCER OF THE LARYNX. By Chevalier Jackson, M.D. and Chevalier L. Jackson, M.D. Philadelphia, W. B. Saunders Company, [c. 1939]. 309 pages, illustrated. 8vo. Cloth, $8.00.

"CANCER of the Larynx" by the Jacksons is a complete, concise monograph on cancer of the larynx—how to diagnose and treat it. It is consummate experience set down as most fascinating reading for any physician, and at the same time is an authoritative guide for the student or experienced practitioner of laryngology. CHARLES R. WEETH.

Surgical History

THE STORY OF SURGERY. By Harvey Graham. New York, Doubleday, Doran & Company, Inc., [c. 1939]. 425 pages, illustrated. 8vo. Cloth, $3.75.

THIS volume presents the history of surgery from its beginnings to our own times. It is engagingly written, and holds the reader's interest throughout. Although it is not a product of original study of the sources, it is based on reliable secondary accounts, and is accurate in its facts. It is recommended to every physician as preferred reading.

GEORGE ROSEN.

Fecal Diagnosis

DIE FAECES DES MENSCHEN. Funktionelle Diagnostik der Darmkrankheiten. Physiologie und Pathophysiologie der Verdauungsvorgänge. By Professor Dr. Med. W. Heupke. (Band 28 of "Medizinische Praxis"). Leipzig, Theodor Steinkopff, [c. 1939]. 115 pages, illustrated. 8vo. Paper, RM. 9.

THIS booklet is of definite value to every physician who really is interested in making a correct diagnosis from the feces as to the pathology of the intestines. Many items remind one of the classical

textbook by Schmidt and Strasburger on the same subject. The booklet is up to date, and contains excellent descriptions of tests, instructive illustrations, and distinct pathological and physiological explanations of the relationship between laboratory findings and intestinal physiology and pathology.

MAX BERLINER.

Childbirth in Fiction

A CHILD IS BORN. By Mary M. Axelson. Caldwell. Idaho, The Caxton Printers, Ltd., [c. 1939]. 298 pages. 8vo. Cloth, $2.50.

A MOTION picture has been made from this book which is called a novel. The labor room conversations of a strange collection of women are featured. The heroine, after thirty hours in labor, is taken to the delivery room and given an anesthetic. Then husband and wife are asked to answer that famous question, "Whom shall we save, mother or baby?" Husband and wife, who are given no opportunity to consult with each other, disagree. She elects death by Cesarean section. The doctors in the book are a sorry lot.

CHARLES A. GORDON.

A New Psychiatric Text

PSYCHOBIOLOGY AND PSYCHIATRY. A Textbook of Normal and Abnormal Human Behavior. By Wendell Muncie, M.D. St. Louis, C. V. Mosby Co., [c. 1939]. 739 pages, illustrated. 8vo. Cloth, $8.00.

FOR many years students and practitioners of psychiatry have sought a book which would clarify the teachings of the dean of American psychiatry, Adolf Meyer. This longfelt need has at last been realized through the good offices of Doctor Muncie, who has been a resident in various clinical and teaching work at the Henry Phipps Psychiatric Clinic of the Johns Hopkins Hospital for the past ten years.

The primary aim of this textbook is to give students "a fair account of the conceptions, teaching, and working methods of the Clinic as currently constituted, with enough historical background to make the present understandable as a developmental product from the past and to give a vision of the future." It is the hope of Doctor Meyer that this publication will be of assistance in orienting those who wish to enter the specialty of psychiatry, and that with particular emphasis upon the need of adequate familiarity "with man as person a necessary part of all medical responsibility."

The contents are divided into three parts: Psychobiology—The Study of Normal Behavior, Abnormal Behavior—Pathology and Psychiatry, and Treatment. Sixty-nine illustrations lend clarity to Meyerian conception and methodology which requires a willingness to study and let the facts speak for themselves.

FREDERICK L. PATRY.

Chemistry of Enzymes

CRYSTALLINE ENZYMES. The Chemistry of Pepsin, Trypsin, and Bacteriophage. By John H. Northrop. New York, Columbia University Press. [c. 1939]. 176 pages, illustrated. 8vo. Cloth, $3.00.

BASED on the Jesup Lectures at Columbia University, Dr. Northrop has assembled investigations in one volume on not only the crystalline enzymes and their precursors but also on bacteriophage. The author and his collaborators are the vanguard of this subject, and their analysis of the field as well as their findings should stimulate both commercial and medical interest. With the complete review furnished and the detailed methods of preparation and analysis, the text is the only survey in this field of chemistry.

IRVING M. DERBY.

More International Clinics

THE NEW INTERNATIONAL CLINICS. Original Contributions: Clinics; and Evaluated Reviews of Current Advances in the Medical Arts. Edited by George M. Piersol, M.D. Volume IV, New Series Two. Philadelphia, J. B. Lippincott Co., [c. 1939]. 339 pages, illustrated. 8vo. Cloth, $3.00.

THE present number of the Clinics contains several papers of interest on chemotherapy in pneumonia, endocrinology, vitamin K and hemorrhage in peptic ulcer. There is an exceedingly good, complete, and interesting review of urinary lithiasis by Reich of Long Island College Medical School. Willard presents a synopsis of current views of idiopathic ulcerative colitis. The article ends with a none too happy note.

ANDREW M. BABEY.

BOOKS RECEIVED

for review are promptly acknowledged in this column; we assume no other obligation in return for the courtesy of those sending us the same. In most cases, review notes will be promptly published shortly after acknowledgment of receipt has been made in this column.

Biological Products. By Louis Gershenfeld, P.D., B.Sc. New York, Romaine Pierson Publishers, Inc., [c. 1939]. 236 pages, illustrated. 8vo. Cloth, $4.00.

Vergleichende Epidemiologie. By Dr. Med. Friedrich Wolter. Forms Band 29 of the Medizinische Praxis. Leipzig, Theodor Steinkopff, [c. 1940]. 169 pages. 8vo. Paper, RM. 11.

Sketches In Psychosomatic Medicine. By Smith Ely Jelliffe, M.D. (Nervous and Mental Disease Monographs No. 65). New York, Nervous and Mental Disease Monographs, [c. 1939]. 155 pages, illustrated. 8vo. Paper, $3.00.

Unto The Fourth Generation. Gonorrhea and Syphilis. What the Layman Should Know. By Irving Simons, M.D. New York, E. P. Dutton & Co., [c. 1940]. 243 pages, illustrated. 8vo. Cloth, $2.50.

Standard Methods of the Division of Laboratories and Research of the New York State Department of Health. By Augustus B. Wadsworth, M.D. Second edition. Baltimore, Williams & Wilkins Company, [c. 1939]. 681 pages, illustrated. 8vo. Cloth, $7.50.

Demonstrations of Physical Signs in Clinical Surgery. By Hamilton Bailey, F.R.C.S. Seventh edition. Baltimore, Williams & Wilkins Company, [c. 1940]. 310 pages, illustrated. 8vo. Cloth, $6.50.

Fundamentals of Biochemistry in Relation to Human Physiology. By T. R. Parsons, M.A. Sixth edition. Baltimore, William Wood & Company, [c. 1939]. 461 pages, illustrated. 12mo. Cloth, $3.00.

Surgical Diagnosis. By Stephen Power, M.S. Baltimore, Williams & Wilkins Company, [c. 1939]. 228 pages, illustrated. 8vo. Cloth, $4.50.

Viruses and Virus Diseases. By Thomas M. Rivers, M.D. (Lane Medical Lectures). Stanford University, Stanford University Press, [c. 1939]. 133 pages, illustrated. 4to. Cloth, $2.50.

Sexual Pathology. A Study of Derangements of the Sexual Instinct. By Magnus Hirschfeld, M.D. New York, Emerson Books, Inc. [c. 1940]. 368 pages. 8vo. Cloth, $2.95.

Art In Eyeglasses. What to Wear and Why. By Frank G. Murphy, M.D. Mason City, Iowa, The Author, [c. 1940]. Illustrated. 8vo. Paper, $1.00.

The Inter-Relationship of Mind and Body. Volume XIX of a Series of Research Publications of the Association for Research in Nervous and Mental Disease. Baltimore, Williams & Wilkins Company, [c. 1939]. 381 pages, illustrated. 8vo. Cloth, $6.00.

Argyria. The Pharmacology of Silver. By William R. Hill, M.D. and Donald M. Pillsbury, M.D. Baltimore, Williams & Wilkins Company, [c. 1939]. 172 pages. 8vo. Cloth, $2.50.

The Therapeutics of Internal Diseases. Volumes I & II edited by George Blumer, M.D. New York, D. Appleton-Century Company, [c. 1940]. 4to. Illustrated. Cloth, $10.00 per volume.

The Patient's Dilemna. The Quest for Medical Security in America. By Hugh Cabot, M.D. New York, Reynal & Hitchcock, [c. 1940]. 284 pages. 8vo. Cloth, $2.50.

Medical Care. Volume VI, Number 4 of "Law and Contemporary Problems". Durham, Duke University Press, [c. 1939]. 4to. Paper, 75c.

Congenital Cleft Lip, Cleft Palate and Associated Nasal Deformities. By Harold S. Vaughan, M.D. Philadelphia, Lea & Febiger, [c. 1940]. 210 pages, illustrated. 8vo. Cloth, $4.00.

On Oxidation, Fermentation, Vitamins, Health and Disease. By Albert V. Szent-Györgyi, M.D. Baltimore, Williams & Wilkins Company, [c. 1939]. 109 pages. 8vo. Cloth, $2.00.

A Synopsis of Regional Anatomy. By T. B. Johnston, M.D. Fourth edition. Philadelphia, Lea & Febiger, [c. 1939]. 462 pages, illustrated. 12mo. Cloth, $4.50.

Human Helminthology. A Manual for Physicians, Sanitarians and Medical Zoölogists. By Ernest Carroll Faust, M.A. Second edition. Philadelphia, Lea & Febiger, [c. 1939]. 780 pages, illustrated. 8vo. Cloth, $8.50.

Maternal Care and Some Complications. The Principles of Antepartum, Intrapartum, and Postpartum Care and the Management of Some Serious Complications. F. L. Adair, M.D., Editor. Chicago, University of Chicago Press, [c. 1939]. 194 pages. 12mo. Cloth, $1.50.

Jewish Contributions to Medicine in America. From Colonial Times to the Present. By Solomon R. Kagan, M.D. Second edition. Boston, Boston Medical Publishing Company, [c. 1939]. 790 pages, illustrated. 8vo. Cloth, $3.50.

EDITORIALS

Concluded from page 103—

intracranial lesions and brain tumors, and to distinguish between diffuse and focal brain lesions in epilepsy.

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1 *M. E. Davis and A. K. Koff, Am. J. of Obs. and Gyn. 36:2*

2 *George Joyce Hall, Calif. and West. Med. 51:3*

3 *R. H. Kunstadter, Endocrinology 25:661*

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Medical Times

Dietetic Digest

THE increased importance of the field of nutrition has prompted a review of the progress of the medical sciences in dietetics and nutrition. Each month in these pages is presented the current literature in this field, abstracted by

Madeline Oxford Holland, B.Sc., M.Sc.

Diet Cause of Stomatitis

Aykroyd, Krishman and Passmore in the *Lancet* (237, 825 (1939) 6059) suggest that stomatitis is caused by diet. Twenty-four patients who were rice-eaters, and suffering from stomatitis, were given 50-300 mg. of nicotinic acid daily. Nine of the patients were either greatly improved or cured rapidly, with seven individuals showing definite improvement. In the latter group some symptoms remained even after prolonged treatment. No improvement was shown in the remaining eight patients. Nine patients were used as controls, being given the same rice diet over the same period of time. Of these nine, 1 became worse, 5 remained unchanged and 3 showed a slight improvement.

Ascorbic Acid Content and Destruction in Milk

Woessner, Elvehjem and Schuette in the *Journal of Nutrition* (*18*, 619, (1939) 6) present results of the determination of ascorbic acid (vitamin C) content in commercial milks obtained from Holstein, Brown Swiss, Jersey and Guernsey cows. Milk obtained from the Brown Swiss herd contained the most ascorbic acid per liter, followed by Jersey, Guernsey and Holstein, respectively.

Commercial raw and certified milks lose only a small amount of their antiscorbutic potency, whereas commercial pasteurized milks average about one-half as much ascorbic acid content as the fresh milk, and significantly less ascorbic acid than the commercial unpasteurized milks.

The quantity of dehydroascorbic acid is less than ascorbic acid in both pasteurized and unpasteurized milks, being less of the total in the former than in the latter. Pasteurization has a tendency to form more dehydroascorbic acid, which, once formed, is more readily destroyed.

In commercially pasteurized milk to which vitamin D concentrates have been added by means of homogenization, the average value of ascorbic acid content falls below that of ordinary pasteurized milks. The antiscorbutic property is equivalent to the average value for commercial pasteurized milks in milk obtained from animals fed irradiated yeast to increase the vitamin D content.

Mineral modified milk is specially treated and is low in ascorbic acid content. The authors conclude that homogenization and mineral modification destroy ascorbic acid in milks.

Vitamin Mineral Ratio in Milk

Drummond, Gray and Richardson in the *British Medical Journal* (II, 757 (1939) 4110) report that 26 samples of human milk were found to contain an average vitamin D value of 6 International Units per 100 ml. A calcium phosphorus ratio of 2.0 was determined, as based on a 21-41 mg. percentage of calcium and 10-18% of phosphorus in the same samples. Cows' milk contains much more calcium and phosphorus than does human milk but the ratio is higher in the latter (approximately

—Continued on page XX

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MODERN IRON THERAPY

Dietetic Digest

—Continued from page XVIII

1.5 in the former). The nursing mother was found to require a minimum of 200 International Units of vitamin D daily, developed from a correlation of the milk content and the diet content of vitamin D.

Vitamin B Therapy in Neural Inflammation and Degeneration

McCORMICK in the *Medical Record* (Sept. 1, 15, 1939, pp. 303, 343) presents clinical data to indicate that many forms of vitamin B deficiency disease have been masquerading as obscure neurological entities in modern civilized life. Beriberi, until the present time, was regarded as a deficiency disease peculiar to Orientals. Accumulation of evidence shows that a liberal variety of this same disease in unrecognized forms now exists much closer to home.

In a previously hypovitaminotic subject the greatly increased vitamin B demand created by an acute infectious process such as poliomyelitis and encephalitis, or by prolonged overexertion, may be all that is needed to precipitate an extreme B_1 avitaminosis. The relative avitaminosis of the different parts of the nervous system under these conditions may determine the selective effect of the resultant destructive action.

Destructive changes may be affected more gradually in the chronic degenerative diseases of the nervous system by prolonged action of more moderate B_1 hypovitaminosis accentuated by more slowly acting intoxications, bacterial or chemical, such as syphilis, lead, arsenic, alcohol and tobacco. Occupational increase in vitamin B demand may also exercise an etiological influence in these diseases, and may help to determine selective action in the neuropathological process. The uniformity of deficient vitamin B intake in the dietary

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history in these diseases, and the marked response to vitamin B therapy support the hypothesis of vitamin B deficiency as an etiological factor.

Vitamin B therapy in acute inflammatory and chronic degenerative diseases of the nervous system such as poliomyelitis resulted in rapid recoveries with freedom from or rapid regression of paralysis.

Under the same treatment a spectacular reversion to normal health was noted in cases of acute *encephalitis lethargica.* Satisfactory results were also noticed in cases of chronic postpoliomyelitis, postencephalitis, progressive muscular atrophy and dystrophy.

An obvious shortage in vitamin B intake was found in surveying the dietary habits of 133 cases of acute inflammatory and degenerative diseases of the nervous system.

Since the number of cases studied is not large enough to be conclusive, further observations on the specific etiological relationship will be made. The patient must be given the benefit of these preliminary findings since the vitamin B method in prophylaxis and therapy is simple and harmless.

The author also explains the relation of sex incidence, physical overexertion and muscle soreness in beriberi and poliomyelitis on the basis of the hypothesis of vitamin B deficiency.

Electrically-Neutral Metal Applied in Fractures

Venable in *The Southern Surgeon* ((Dec. 1939) VIII, 6, 456) reports on the use of vitallium, an alloy of cobalt, chromium and molybdenum, in the internal fixation of bone fractures.

Stainless and rustless steel were for many years considered the very best avail-

able metals. After three years of experimentation and clinical application however, it is the belief of the author that vitallium is superior.

In the fixation of fractures, electrolysis is a controlling factor in the application of metals. Vitallium, when immersed in normal salt solutions, blood serum and body fluids, displays an instantaneous passivity. As neither friction nor agitation can transform the new metal from its electrical neutrality, corrosion, bone necrosis, demineralization, and non-union due to decalcification, are eliminated.

✚

Whatever mechanical fixation is required from vitallium, x-ray and direct examinations proved that the vitallium nails, screws and plates *in situ* will maintain that fixation indefinitely. Venable and his associates, to arrive at these conclusions, extracted nails and removed screws after various intervals for examination. This final inspection showed the vitallium untarnished and uncorroded, a lack of discolored fluid about the site, change of tissue *nil* both macroscopically and microscopically, and no excess callus. The conclusions to date would point to the fact that the new metal may remain inserted indefinitely, with no fear of disturbance.

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